Appendix B

Air Quality/Greenhouse Gas Emissions Studies & Modeling

Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Heritage Ridge Project City of Goleta, California

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SEPTEMBER 2014

Printed on 30% post-consumer recycled material.

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EXECUTIVE SUMMARY

The Heritage Ridge project, proposed by Towbes Group, Inc., entails development of two housing concepts and a neighborhood park on a 16.2-gross-acre site in the City of Goleta (City), in Santa Barbara County (County), California.

The first housing concept, referred to as Area A, will be a senior (62 years and older) housing project that includes 108 one-bedroom units and 24 two-bedroom units, for a total of 132 units in two buildings. The second housing concept, referred to as Area B, will be workforce housing and will include 149 one-bedroom units, 55 two-bedroom units, and 24 three-bedroom units, for a total of 228 units in six buildings. The combined total proposed units is 360 units in eight buildings, resulting in a density of 22.2 dwelling units per gross acre. All senior housing and workforce housing units will be rentals. Area C will include a neighborhood park, which will be approximately 2 gross acres in size.

The project site is currently undeveloped and is bound by the multifamily Willow Springs I residential development and Camino Vista Road to the south; Los Carneros Road to the west; undeveloped area, the Union Pacific Railroad, and U.S. Highway 101 to the north; and commercial and industrial development to the east. The project site is located in the South Central Coast Air Basin, which is comprised of Ventura County, Santa Barbara County, and San Luis Obispo County, and is under the jurisdiction of the Santa Barbara County Air Pollution Control District (SBCAPCD). Consistent with the SBCAPCD recommendations for project-level review, this analysis used the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, available online (http://www.caleemod.com), to estimate project-generated emissions.

Air Quality Analysis

The air quality impact analysis evaluated the potential for adverse impacts to the ambient air quality due to construction and operational emissions resulting from the proposed project. Impacts are evaluated for their significance based on the SBCAPCD environmental thresholds of significance (SBCAPCD 2014a). Construction of the proposed project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. Construction of the proposed project would not exceed the SBCAPCD's general rule of 25 tons per year of reactive organic compounds (ROCs) or oxides of nitrogen (NO_x) used for determining significance of construction exhaust emissions during 2014, 2015, 2016, or 2017.

Operation of the proposed project would produce ROC, NO_x, carbon monoxide (CO), sulfur oxides (SO_x), and particulate matter with a diameter less than or equal to 10 microns and particulate matter with a diameter less than or equal to 2.5 microns (PM_{10}, and $PM_{2.5}$, respectively) emissions associated with vehicle sources, and area sources such as energy use and landscape maintenance. The proposed project would not generate vehicular emissions that would exceed the SBCAPCD's ROC or NO_x significance thresholds of 25 pounds per day for vehicle emissions only. Additionally, the project's combined area and vehicle emissions would not exceed the SBCAPCD's ROC and NO_x emissions thresholds of 240 pounds per day or the PM_{10} emissions threshold of 80 pounds per day. The analysis concludes that the daily construction and operational emissions would not exceed the thresholds for criteria pollutants; therefore, impacts would be less than significant.

As documented by the California Air Resources Board (CARB) *Air Quality and Land Use Handbook: A Community Health Perspective*, and in subsequent health studies, living in proximity to freeways and high-traffic roadways may lead to adverse health effects beyond those associated with regional air pollution. The proposed project is estimated to be located approximately 280 feet south from the closest U.S. Highway 101 lane and approximately 80 feet south from the Union Pacific Railroad line. The proposed project includes an 8-foot-high sound wall along the northern perimeter of project site between the proposed residential development and U.S. Highway 101 and the Union Pacific Railroad.

The SBCAPCD has advised that with respect to health risks associated with locating sensitive land uses in proximity to freeways and other high traffic roadways, health risk assessment modeling may not thoroughly characterize all the health risk associated with nearby exposure to traffic-generated pollutants. Therefore, the SBCAPCD does not recommend using health risk assessment modeling as a tool for assessing health risk impacts for these types of projects (SBCAPCD 2014b). Because the project would entail residential development within 500 feet of U.S. Highway 101 and because the SBCAPCD does not currently recommend a quantitative method to assess and mitigate potential impacts, the project would result in a potentially significant impact related to siting sensitive receptors and mitigation measures are required to reduce impacts to a less than significant level. With incorporation of mitigation, including forced air ventilation with high-efficiency filters on outside air intake ducts and maintenance of filters in accordance with the manufacturer's recommendations, impacts would be reduced to less than significant.

In regards to potential project-generated odors, project construction would not cause an odor nuisance, and impacts associated with odors during construction would be considered less than significant. The proposed project entails the operation of a residential community and would not

result in the creation of a land use that is commonly associated with odors. Therefore, project operations would result in a less-than-significant odor impact.

Consistency with the SBCAPCD Clean Air Plan means that direct and indirect emissions associated with the project are accounted for in the most recent Clean Air Plan's emissions growth assumptions and that the project is consistent with policies adopted in the Clean Air Plan. The project would not conflict with or propose to change existing land uses or applicable land use policies as designated in the City of Goleta General Plan; therefore, the project was included in the Santa Barbara County Association of Governments 2007 Regional Growth Forecast. As such, the project would not conflict with the applicable air quality plan, which currently is the SBCAPCD 2010 Clean Air Plan, and the proposed project would result in a less-than-significant impact.

In analyzing cumulative impacts from the proposed project, the assessment must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the County is designated as nonattainment for the National Ambient Air Quality Standards (NAAQS) or the California Ambient Air Quality Standards (CAAQS). The County is currently in attainment of NAAQS and is in attainment for all CAAQS with the exception of the state 8-hour O_3 standard and the state standards for PM_{10}. Because implementation of the project would result in less-than-significant short-term impacts to air quality associated with construction and less-than-significant long-term impacts associated with operation of the project, the proposed project's contribution to the County's nonattainment status for state 8-hour O_3 and PM_{10} standards would be less than cumulatively considerable. As the project would not result in significant O_3 precursor emissions or PM_{10} emissions, and project-generated emissions have been taken into account in the SBCAPCD 2010 Clean Air Plan growth projections, cumulative impacts would be less than significant.

Greenhouse Gas Emissions Analysis

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 greenhouse gas (GHG) emissions. The California Natural Resources Agency (CNRA) has adopted statewide qualitative GHG emissions thresholds of significance in Appendix G to the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.). There are no statewide numerical GHG emission thresholds of significance.

The SBCAPCD has not adopted significance thresholds for GHG emissions. However, the SBCAPCD recommends that all projects subject to CEQA review be considered in the context of GHG emissions and climate change impacts, and that CEQA documents should include a quantification of GHG emissions from all project sources, direct and indirect, as applicable.

The City has also not adopted numerical thresholds of significance for GHG emissions. However, the City is currently referring to the Bay Area Air Quality Management District's (BAAQMD) thresholds for GHG emissions as guidance for City of Goleta project-level projects, based on Santa Barbara County's memo titled *Support for Use of BAAQMD GHG Emissions Standards* (Santa Barbara County 2010).

The BAAQMD GHG emissions threshold that would be most appropriate to apply to the proposed project is 4.6 metric tons of carbon dioxide equivalent (MT CO_2E) per service population (SP) per year (SP equals residents plus employees) (BAAQMD 2010). Per the BAAQMD's *CEQA Air Quality Guidelines*, the GHG threshold applies only to the operational emissions, but construction emissions associated with the proposed project (e.g., those from off-road equipment, worker vehicles) should be estimated and reported (BAAQMD 2010). However, because it is common practice for GHG analyses performed for proposed City of Goleta projects to amortize or annualize construction emissions over the life of the project, this analysis added amortized construction emissions to the estimated annual operational emissions.

Annual GHG emissions associated with temporary construction activity and long-term operations were quantified using CalEEMod. The service population for the workforce housing was determined based on CalEEMod defaults (2.72 persons per dwelling unit), and the service population for the senior housing was determined based on the Heritage Ridge Occupant/Unit Ratio Analysis study conducted by The Towbes Group, Inc. (2014) (1.11 persons per senior dwelling unit). The service population for the workforce housing was estimated to be 620 persons, and the service population for the senior housing was assumed to be 145 persons, for a total project-service population of 765 persons. It is assumed that the proposed project would generate minimal employment, which was assumed to be zero for the purpose of computing the service population.

The estimated GHG emissions generated during construction of the proposed project would be approximately 328 MT CO_2E in 2015, 463 MT CO_2E in 2016, and 232 MT CO_2E in 2017, for a total of 1,023 MT CO_2E. With the addition of 363 MT CO_2E resulting from pre-construction export emissions in 2014, the combined total is estimated to be 1,386 MT CO_2E. Estimated project-generated construction emissions annualized over 30 years would be approximately 46 MT CO_2E per year.

The proposed project would generate operational GHG emissions from vehicular sources, area sources (natural gas combustion and landscape maintenance), electrical generation (including electrical generation associated with water supply and wastewater treatment), and solid waste. Vehicles traveling to and from the project land uses would be the primary source of project-generated GHG emissions. The proposed project would incorporate sustainable design features that would reduce GHG emissions associated with energy use, vehicle traffic, and water use. The unmitigated emissions analysis assumes that project design features, which would reduce GHG

emissions, are not incorporated. The mitigated emissions analysis assumes that proposed project features with quantifiable GHG emissions reductions are incorporated.

Estimated annual unmitigated (without project features) project-generated operational GHG emissions in 2018 (i.e., first full year of operation) would be approximately 2,839 MT CO_2E per year. Estimated annual unmitigated project-generated emissions and amortized project construction emissions would be approximately 2,885 MT CO_2E per year. Estimated unmitigated project emissions of 2,885 MT CO_2E per year, when divided by the service population (765 persons), would be 3.77 MT CO_2E per SP per year.

Estimated annual mitigated (with project features) project-generated operational GHG emissions in 2018, assuming quantifiable reductions resulting from incorporation of sustainable design features, would be approximately 2,495 MT CO_2E per year. Estimated annual mitigated project-generated emissions and annualized project construction emissions would be approximately 2,541 MT CO_2E per year. Estimated mitigated project emissions of 2,541 MT CO_2E per year, assuming incorporation of proposed sustainable design measures with quantifiable reductions, when divided by the service population (765 persons), would be 3.32 MT CO_2E per SP per year.

Both estimated annual unmitigated and mitigated project-generated emissions in 2018 from area and energy sources, mobile sources, and annualized project construction emissions would be below the BAAQMD efficiency metric threshold of 4.6 MT CO_2E per SP per year and impacts would be less than significant.

At this time, no mandatory GHG regulations or finalized agency guidelines would apply to implementation of this project, and no conflict would occur. The SBCAPCD has not adopted GHG reduction measures that would apply to the GHG emissions associated with the proposed project. On July 15, 2104, the City Council voted unanimously to adopt the City's Climate Action Plan. The 2014 Climate Action Plan identifies both quantified and nonquantified measures to effectively meet GHG reduction targets. The identified local actions and associated co-benefits will contribute to the City's current and future prosperity and sustainability by (1) conserving resources such as energy and water, (2) fostering the creation of green jobs, and (3) furthering Goleta's leadership in clean research and development industries (City of Goleta 2014a). The Climate Action Plan, however, does not serve as a Qualified Greenhouse Gas Emissions Reduction Plan because there is no "substantial evidence" as required under CEQA Section 15183.5(D) to demonstrate the suggested voluntary measures will quantifiably reduce GHG emissions to meet the projected 2020 target (Slaven, pers. comm. 2014). Therefore, no CEQA document can tier from the Climate Action Plan. Because there are no current adopted plans, guidelines, or regulations that would apply to implementation of the proposed project, and no conflict would occur, this cumulative impact would be less than significant.

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1.0 INTRODUCTION

1.1 REPORT PURPOSE

The purpose of this report is to evaluate the potential air quality and greenhouse gas (GHG) impacts during construction and operation of the proposed Heritage Ridge project (proposed project) proposed by The Towbes Group, Inc. The project was previously referred to as North Willow Springs. This report evaluates short-term (construction) and long-term (operational) air quality and GHG impacts that would potentially occur as a result of implementation of the proposed project. Impacts are evaluated for their significance based on the Santa Barbara County Air Pollution Control District's (SBCAPCD) environmental thresholds of significance and the City of Goleta's (City's) recommended threshold of significance for GHG emissions.

1.2 PROJECT LOCATION

The Heritage Ridge project site is located in the City of Goleta, California. The project site is undeveloped, and is bound by the multifamily Willow Springs I residential development and Camino Vista Road to the south; Los Carneros Road to the west; undeveloped area, the Union Pacific Railroad, and U.S. Highway 101 to the north; and commercial and industrial development to the east.

The project site is located in the South Central Coast Air Basin, composed of Ventura County, Santa Barbara County, and San Luis Obispo County, and is under the jurisdiction of the SBCAPCD. See Figure 1, Project Site Location.

1.3 PROJECT DESCRIPTION

The proposed project would develop two housing concepts and a neighborhood park on a 16.2-gross-acre site. The first housing concept, referred to as Area A, will be a senior (62 years and older) housing project that includes 108 one-bedroom units and 24 two-bedroom units, for a total of 132 units in two buildings. The second housing concept, referred to as Area B, will be workforce housing and will include 149 one-bedroom units, 55 two-bedroom units, and 24 three-bedroom units, for a total of 228 units in six buildings. The combined total proposed units is 360 units in eight buildings, resulting in a density of 22.2 dwelling units per gross acre. All senior housing and workforce housing units will be rentals. Area C will include a neighborhood park, which will be approximately 2 gross acres in size. See Figure 2, Site Plan.

The senior housing development will have a leasing office, clubhouse, and recreation facilities such as a pool, spa, gym, outdoor recreation, and barbecue areas. The two buildings in the senior housing development will be three stories in height, but there will be no third floor corner units

facing Camino Vista. One of those corners on each building will be an outdoor deck for the use by the residents and the other corner will have a stepped-back roof.

The workforce development will also have a leasing office, clubhouse, and recreation facilities such as a pool, spa, gym, children's play equipment, and barbecue area. Buildings 3, 4, and 5 in the workforce housing development will be two stories in height, while Buildings 6, 7, and 8 will be three stories in height. Building 6, which is closest to Camino Vista, will have no third floor corner units facing Camino Vista. One of the corners of Building 6 will be an outdoor deck for the use by the residents, and the other corner will have a stepped-back roof.

All three-story buildings will have elevators and central corridors. The two-story buildings will have walkup units on the second floor. The portion of Camino Vista opposite the Willow Springs I development will be widened to a curb-to-curb distance of approximately 43 feet, which will allow for parking on the Heritage Ridge side of Camino Vista only.

Table 1, Project Development Details, presents the square footage and building level estimates for the senior housing and workforce housing developments.

Table 1
Project Development Details

Building	Gross Square Feet	Net Square Feet	Building Stories
Senior Housing			
Building 1	50,562	36,864	3
Building 2	69,148	52,080	3
Subtotal	*119,710*	*88,944*	*N/A*
Workforce Housing			
Building 3	28,235	24,368	2
Building 4	21,848	18,880	2
Building 5	21,848	18,880	2
Building 6	39,431	29,179	3
Building 7	67,727	51,291	3
Building 8	38,930	28,830	3
Subtotal	*218,019*	*171,428*	*N/A*
Total	**337,729**	**260,372**	**N/A**

Source: Crooker, pers. comm. 2014
Note: Square footage estimates are preliminary and represent an approximation.

The project includes a request for modifications from the parking standards in the City's Zoning Ordinance. The senior housing development will provide 1 parking space for each one-bedroom unit, 1.3 parking spaces for each two-bedroom unit, and 1 visitor parking space for every 10 units. The proposed senior housing parking yields a total of 152 parking spaces, which is a modification from the City-required 183 parking spaces. The 152 senior housing parking spaces are comprised of 112 carports and 40 open parking spaces. The workforce housing development will provide one parking space for each one-bedroom unit, two parking spaces for each two-bedroom unit, two parking spaces for each three-bedroom unit, and one visitor parking space for every 6 units. A total of 345 parking spaces will be provided in the workforce housing development, which is a modification from the City-required 365 parking spaces. The 345 workforce housing parking spaces are comprised of 180 carports and 165 open parking spaces.

Based on data derived from parking counts at other applicant senior and workforce housing properties, applying the City-required parking standards would result in substantially over-parking this project, and the proposed number of parking spaces are more than adequate to service the project. The parking demand analysis contained in the *Traffic Circulation and Parking Study* for the project, prepared by Associated Transportation Engineers (ATE 2014), concluded that a ratio of less than 1:1 carport spaces per unit is provided to allow for a varied pricing structure, which will accommodate those residents who prefer to pay less rent for units without carports.

The proposed project also includes a 2-acre public neighborhood park centrally located on the project site. The neighborhood park will be improved with passive recreation facilities consistent with City Policy OS 6.4, and 13 parking spaces will be provided for public use of the park.

The project landscape will be consistent with that used as the plant palate at the nearby development called Willow Springs, which was developed by the proposed project applicant. The majority of the park will be landscaped with native or climate-appropriate plants with some small areas of grass for recreation purposes. On-site detention and treatment of stormwater will be provided at several locations throughout the project, consistent with the California post construction requirements. Additional detention of stormwater for flood control purposes will occur in the off-site detention basin located adjacent to Willow Springs I, the residential development located to the south of the project.

Sewer service will be provided by the Goleta West Sanitary District. A portion of the Goleta West sanitary sewer line, which is now in an easement adjoining the eastern property boundary, will be relocated into the driveway at the west side of the property. Water service will be provided by the Goleta Water District in accordance with the terms of the Judgment Upon Arbitration Award filed in Santa Barbara Superior Court on February 26, 2002.

The gross site area inclusive of the park is 16.2 acres. The net acreage (excluding the park) is 14.2 acres. The conceptual plan provides a building coverage of 22.1% (total buildings/net area) and a common open space of 41.8% (excluding the public park acreage). Lot coverage percentages and open space percentages will be provided in the finalized design layout, which may include modifications in accordance with Policy HE 10.2.

Because both the senior housing project and the workforce housing project are rental projects, this development is eligible for incentives under the City's Housing Element Policy HE 10.2, including reductions in parking and open space requirements. The applicant proposes a Vesting Tentative Parcel Map to consolidate the 13 existing lots into three parcels. The applicant also requests the abandonment of the associated road parcels for Via Maya and Via Luisa because the roads within the project will be private. The applicant also requests that the easement for Los Carneros Road, which crosses the northwestern corner of the property near the intersection of Los Carneros Road and Calle Koral, and the slope easement along Los Carneros Road and Calle Koral be vacated by the City.

The City's General Plan Land Use Designation for the project site is Residential Medium Density. The City's Inland Zoning Ordinance (Article III, Chapter 35, Goleta Municipal Code), designates the project site as zone district DR-20 (Design Residential, 20 dwelling units per gross acre), and land use code Moderate Density Multi-Family. The proposed zoning and General Plan Designation for the park is Recreation and Open Space/Passive Recreation, respectively (MAC Design Associates 2014).

As a component of the requested project approvals, the applicant is requesting approval of a General Plan Amendment to complete revisions to General Plan Figure 3-5, Open Space Plan Map, and Figure 4-1, Special-Status Species and Environmentally Sensitive Habitat Areas, which are complementary to those approved for the Willow Springs II project (Case No. 11-080-GPA). A revision of Open Space Element (Figure 3-5) will remove the Environmentally Sensitive Habitat Area designation on a portion of the project site and a revision of Conservation Element (Figure 4-1) will remove an Environmentally Sensitive Habitat Area designation on the same portion of the project site. Removal of an Environmentally Sensitive Habitat Area designation for the project site is appropriate in accordance with General Plan Subpolicy CE 1.5 because a biological study prepared for the project determined that an Environmentally Sensitive Habitat Area does not exist on the site.

1.3.1 Construction

For purposes of estimating project emissions, and based on information provided by the applicant and CalEEMod default values, it is assumed that construction of the project will

commence in January 2015 and will last approximately 30 months, ending in June 2017. The analysis contained herein is based on the following assumptions (duration of phases is approximate):

- Site Preparation – 2 weeks (January 2015)
- Grading – 1.5 months (January 2015 – February 2015)
- Trenching (utility installation) – 2 months (January 2015 – May 2015)
- Building Construction – 25 months (June 2015 – June 2017)
- Application of Architectural Coatings – 18 months (January 2016 – June 2017)
- Paving (parking lot) – 1 week (June 2017)

It is anticipated that parking and paved surfaces would total approximately 4.75 acres (Weber, pers. comm. 2014). The construction equipment mix used for estimating the construction emissions of the project is based on information provided by the applicant and is shown in Table 2, Construction Equipment. For this analysis, it was assumed that heavy construction equipment will operate 5 days a week (22 days per month) during project construction.

Table 2
Construction Equipment

Construction Phase	Equipment	Quantity	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	1	8	97	0.37
Grading	Crawler Tractors	2	8	208	0.43
	Graders	4	8	174	0.41
Trenching	Excavators	3	8	162	0.38
	Tractors/Loaders/Backhoes	2	8	97	0.37
	Trenchers	1	4	80	0.50
Building Construction	Forklifts	3	8	89	0.20
	Tractors/Loaders/Backhoes	2	7	97	0.37
	Welders	1	4	46	0.45
Architectural Coating	Air Compressors	3	6	78	0.48
Paving	Pavers	1	8	125	0.42
	Paving Equipment	2	8	130	0.36
	Rollers	3	8	80	0.38

Pre-construction Export

The project will also include pre-construction export of the existing stockpiled material on site, which is anticipated to occur in 2014. Existing soil is currently stockpiled in two locations on the site and is estimated to be 100,000 cubic yards of soil. It is anticipated that export of soil will require use of one crawler tractor (208 horsepower, 0.43 load factor) for 8 hours per day and one tractor/loader/backhoe (97 horsepower, 0.37 load factor) for 8 hours per day over a total duration of 34 days. Haul trucks are assumed to have a capacity of 20 cubic yards and total haul truck trips is estimated to be 5,000 round-trips (10,000 one-way haul truck trips). This activity will also require three workers on site to load material and two trucks driven to the site daily.

1.3.2 Operation

As previously described, the project includes a 132-unit senior housing development in two buildings totaling 119,710 gross square feet, a 228-unit workforce housing development in six buildings totaling 218,019 gross square feet, and a 2-acre public neighborhood park.

Project-generated trip estimates used in this analysis were based on the *Traffic, Circulation, and Parking Study* prepared for the project by Associated Transportation Engineers (ATE 2014). The traffic analysis developed trip generation estimates using rates contained in the ninth edition of the Institute of Transportation Engineers (ITE) Trip Generation report and traffic counts conducted at the existing nearby Willow Springs I apartment complex. For the proposed senior housing, the trip generation was based on the ITE rates for Senior Adult Housing–Attached (ITE Land Use Code 252), which is 3.44 trips per unit per day. For the proposed workforce housing, the trip generation was based on the ITE Apartment rates (ITE Land Use Code 220), which is 6.65 trips per unit per day. For the neighborhood park, the CalEEMod default trip rate for a City Park was assumed, which is 1.59 trips per acre per day.

1.4 PROJECT SUSTAINABLE DESIGN FEATURES

The proposed project incorporates various project design features that will reduce air pollutant and GHG emissions associated with operation of the project, including energy and water conservation strategies, architectural design features to increase building efficiency, and site design features to encourage non-vehicular travel and pedestrian circulation. Table 3, Proposed Sustainable Design Features, presents proposed transportation- and energy conservation-related measures, as well as measures to improve air quality conditions.

Table 3
Proposed Sustainable Design Features

Transportation-Related Measures
The project consists of higher density uses (22.2 units per acre).
The plan provides an extensive system of continuous pathways and a comfortable walking environment that allows residents to walk freely throughout the project site.
The plan provides on-site recreational amenities for its residents in a central location, eliminating the need for residents to drive elsewhere for these features.
Direct pedestrian links extend from the site to surrounding neighborhoods.
Bicycle parking is provided on site to encourage bicycle use.
All roadways internal to the project are designed to city standards low speed limits. Slow traffic speeds are conducive to walking and bicycling.
Residential units are provided in multistory buildings, reducing the development footprint to less than 23% of the site.
A reduction in the minimum parking required by the City is proposed to minimize the parking footprint and reduce paving.
An existing bus stop is located approximately 0.25 mile from the project site.
An existing Amtrak Station is located less than 0.75 mile from the project site.
A van drop-off area is provided near the senior housing buildings to provide access for a shuttle service such as Dial-a-Ride or similar service.
The project will provide an electric vehicle charging station.
A jogging trail in an adjacent park provides exercise opportunity adjacent to residences to reduce driving
A vegetable gardening area is provided on site to reduce trips to the store and transportation costs related to food distribution.
Energy Conservation-Related Measures
In addition to compliance with CALGreen, the project will be required to meet the requirements of Resolution 12-66 Green Building Standards & Incentives for compliance (also referred to as CALGreen+).
The project will comply with and exceed the Chapter 15.13 Energy Efficiency Standards of the Goleta Municipal Code by also complying with the 2013 Energy Code, which is 25% better than the 2008 Energy Code standards referenced by the Municipal Code.
All residential dwelling units are multifamily residences that use less energy for heating and cooling when compared to larger single-family detached homes.
Buildings 4–6 are oriented primarily on an east–west axis to take advantage of solar orientation. It has been demonstrated that passive solar design, including the orientation of buildings, can take advantage of the Sun's warmth in winter to assist with heating, as well as minimize heat gain in summer months to assist with cooling.
California Green Building Code Title 24, Part 11 (CALGreen) requires that a minimum of 50% all new construction waste generated at the site be diverted to recycle or salvage. The City of Goleta has increased this requirement to 65% as part of the CALGreen+ program. Reducing waste could reduce the amount of vehicle trips transporting materials to and from the site.
The project will incorporate Permeable Pavers and sidewalks with solar reflectance index values to reduce urban heat island (UHI) effect (Pacific Interlock Tan); trails are also light in color.
The project will incorporate large evergreen shade trees to shade parking lot to reduce UHI.
The project will incorporate enhanced energy efficiency in building designs and landscaping plans.
Tall, narrow deciduous trees will be planted on the south and west sides of buildings to provide solar heat in the winter and shade in the summer, which will reduce winter heating and summer cooling energy use.
Water-wise and California native landscaping will be used to reduce water use (thus energy production to distribute and treat water).
An efficient irrigation system will be used to reduce water use (thus energy production to distribute and treat water)
Street trees along Calle Koral and Camino Vista will provide shade and reduce UHI.

Table 3
Proposed Sustainable Design Features

Turf areas for recreational areas will be limited only to reduce water use (thus energy production to distribute and treat water).
Permeable pavers manufactured 250 miles from site (in Hollister, California) will be used to reduce impact from material transportation (LEED Credit idea).
Rainwater from roofs diverted to landscape areas and swales will provide seasonal water sources and reduce supplemental irrigation needs.
Other Measures to Improve Air Quality
No fire places for individual units are proposed.
No wood burning fire places in common rooms or common areas are proposed.

SOURCE: USGS Topo 7.5 Minute Series - GOLETA Quadrangle
Township 4N / Range 28W / Sections 07, 18

FIGURE 1

Project Site Location

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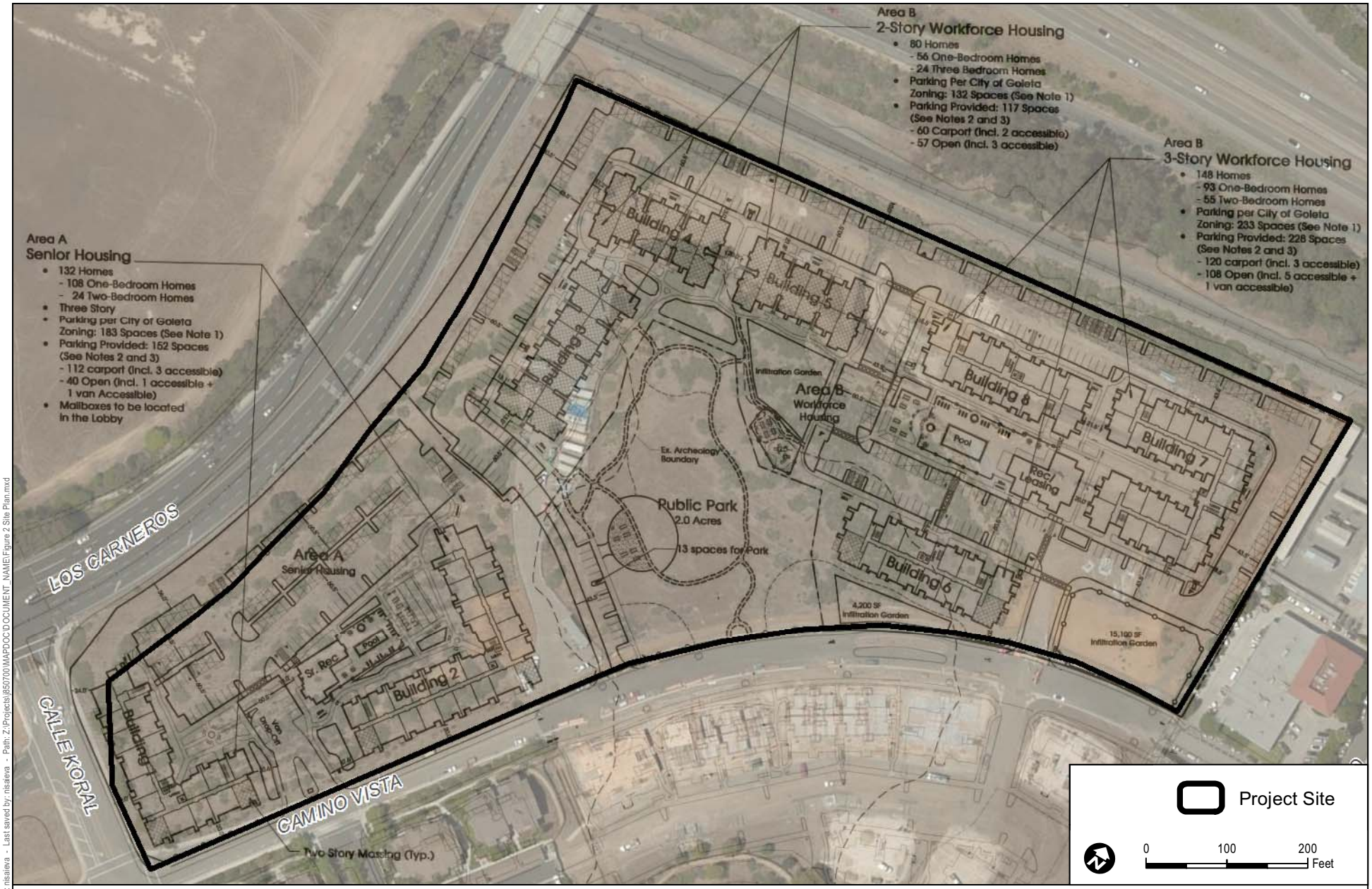

SOURCE: Bing Maps

FIGURE 2

Site Plan

Air Quality and Greenhouse Gas Emissions Analysis Technical Report for the Heritage Ridge Project

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2.0 AIR QUALITY

2.1 EXISTING CONDITIONS

2.1.1 Climate and Topography

The climate in and around the City, as well as most of Southern California, is controlled largely by the strength and position of the subtropical high-pressure cell over the Pacific Ocean. This high-pressure cell typically produces a Mediterranean climate with warm summers, mild winters, and moderate rainfall. This pattern is periodically interrupted by periods of extremely hot weather brought on by Santa Ana winds. Almost all precipitation occurs between November and April, although during these months, the weather is sunny or partly sunny a majority of the time. Cyclic land and sea breezes are the primary factors affecting the region's mild climate. The daytime winds are normally sea breezes, predominantly from the west, that flow at relatively low velocities (City of Goleta 2006).

Santa Barbara County's air quality is influenced by both local topography and meteorological conditions. Surface and upper-level wind flow varies both seasonally and geographically in the County, and inversion conditions common to the area can affect the vertical mixing and dispersion of pollutants. The prevailing wind-flow patterns in the County are not necessarily those that cause high ozone values. In fact, high ozone values are often associated with atypical wind flow patterns. Meteorological and topographical influences that are important to air quality in the County, as described in the SBCAPCD's 2010 Clean Air Plan (SBCAPCD and SBCAG 2011), are summarized below.

Semi-permanent high pressure that lies off the Pacific Coast leads to limited rainfall (around 18 inches per year), with warm, dry summers and relatively damp winters. Maximum summer temperatures average about 70° Fahrenheit (°F) near the coast and in the high 80s to 90s inland. During winter, average minimum temperatures range from the 40s along the coast to the 30s inland. Additionally, cool, humid, marine air causes frequent fog and low clouds along the coast, generally during the night and morning hours in the late spring and early summer. The fog and low clouds can persist for several days until broken up by a change in the weather pattern.

In the northern portion of the County (i.e., north of the ridgeline of the Santa Ynez Mountains), the sea breeze is typically from the southwest. During summer, these winds are stronger and persist later into the night. At night, the sea breeze weakens and is replaced by light land breezes (from land to sea). The alternation of the land-sea breeze cycle can sometimes produce a "sloshing" effect, where pollutants are swept offshore at night and subsequently carried back onshore during the day. This effect is exacerbated during periods when wind speeds are low.

The terrain around Point Conception, combined with the change in orientation of the coastline from the north–south to east–west, can cause counterclockwise-circulation (eddies) to form east of the point. These eddies fluctuate temporally and spatially, often leading to highly variable winds along the southern coastal strip. Point Conception also marks the change in the prevailing surface winds from northwesterly to southwesterly.

Santa Ana winds are northeasterly winds that occur primarily during fall and winter, but occasionally in spring. These are warm, dry winds blown from the high inland desert that descend down the slopes of a mountain range. Wind speeds associated with the Santa Anas are generally 15 to 20 miles per hour (mph), though they can sometimes reach speeds in excess of 60 mph. During Santa Ana conditions, pollutants emitted in Santa Barbara, Ventura County, and the South Coast Air Basin (the Los Angeles region) are moved out to sea. These pollutants can then be moved back onshore into Santa Barbara County in what is called a post-Santa Ana condition. The effects of the post-Santa Ana condition can be experienced throughout the County. Not all post-Santa Ana conditions, however, lead to high pollutant concentrations in Santa Barbara County.

Upper-level winds (measured at Vandenberg Air Force Base once each morning and afternoon) are generally from the north or northwest throughout the year, but occurrences of southerly and easterly winds do occur in winter, especially during the morning. Upper-level winds from the south and east are infrequent during the summer. When they do occur, they are usually associated with periods of high ozone levels. Surface and upper-level winds can move pollutants that originate in other areas into the County.

Surface temperature inversions (0 to 500 feet) are most frequent during the winter, and subsidence inversions (1,000 to 2,000 feet) are most frequent during the summer. Inversions are an increase in temperature with height and are directly related to the stability of the atmosphere. Inversions act as a cap to the pollutants that are emitted below or within them, and ozone concentrations are often higher directly below the base of elevated inversions than they are at the Earth's surface. For this reason, elevated monitoring sites will occasionally record higher ozone concentrations than sites at lower elevations. Generally, the lower the inversion base height and the greater the rate of temperature increase from the base to the top, the more pronounced effect the inversion will have on inhibiting vertical dispersion. The subsidence inversion is very common during the summer along the California coast, and is one of the principal causes of air stagnation.

Poor air quality is usually associated with air stagnation (high stability/restricted air movement). Therefore, it is reasonable to expect a higher frequency of pollution events in the southern

portion of the County, where light winds are frequently observed, as opposed to the northern part of the County, where the prevailing winds are usually strong and persistent.

2.2.2 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).

2.2 POLLUTANTS AND EFFECTS

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, NO_2, CO, sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns in size (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in size ($PM_{2.5}$), and lead (Pb). These pollutants, as well as toxic air contaminants (TACs) are discussed below.[1] In California, sulfates (SO_4), vinyl chloride, hydrogen sulfide, and visibility-reducing particles are also regulated as criteria air pollutants.

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, such as hydrocarbons and NO_x. These precursors are mainly NO_x and volatile organic compounds (VOCs; also referred to as reactive organic compounds or gases (ROGs)). 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 ozone layer (stratospheric

[1] The descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on the U.S. Environmental Protection Agency's "Six Common Air Pollutants" (EPA 2012) and the CARB's *Glossary of Air Pollutant Terms* (CARB 2014a).

ozone) as well as at the Earth's surface in the troposphere (ozone). 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. This health problem is 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.

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 non-reactive air pollutant that dissipates relatively quickly; therefore, ambient CO concentrations generally follow the spatial and temporal distributions of vehicular traffic. CO concentrations are influenced by local meteorological conditions; primarily wind speed, topography, and atmospheric stability. CO from motor vehicle exhaust can become locally concentrated when surface-based temperature inversions are combined with calm atmospheric conditions, 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, thus 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. Fine particulate matter ($PM_{2.5}$) 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. Respirable particulate matter, or coarse particulate matter (PM_{10}), 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.

$PM_{2.5}$ 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 absorbed 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, as well as producing haze and reducing 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 decline in lung function due to breathing in PM_{10} and $PM_{2.5}$. Other groups considered sensitive are smokers and people who cannot breathe well through their noses, as well as exercising athletes, because many breathe through their mouths.

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-emission 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 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 ROGs). Combustion engine exhaust, oil refineries, and fossil-fueled power plants are 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.

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 non-cancer 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 emission 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 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. The California Air Resources Board (CARB) classified "particulate emissions from diesel-fueled engines" (i.e., diesel particulate matter) as a TAC in August 1998. Diesel particulate matter 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 diesel particulate matter (CARB 2000). To reduce the cancer risk associated with diesel particulate matter, CARB adopted a diesel risk reduction plan in 2000.

2.3 REGULATORY SETTING

Regulatory oversight for air quality in the Santa Barbara County portion of the South Central Coast Air Basin is maintained at the regional level by the SBCAPCD, CARB at the state level, and the U.S. Environmental Protection Agency (EPA) at the federal level. Applicable laws, regulations, and standards of these three agencies are described as follows.

2.3.1 Federal

The federal Clean Air Act, passed in 1970 and last amended in 1990, forms the basis for the national air pollution control effort. The 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 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. NAAQS are established for criteria pollutants under the Clean Air Act; the criteria pollutants are 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 the 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.

2.3.2 State

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 4, Ambient Air Quality Standards.

Table 4
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
		Concentration[3]	*Primary*[3,4]	*Secondary*[3,5]
O_3	1-hour	0.09 ppm (180 μg/m^3)	—	Same as Primary Standard
	8-hour	0.070 ppm (137 μg/m^3)	0.075 ppm (147 μg/m^3)	
NO_2[6]	1-hour	0.18 ppm (339 μg/m^3)	0.100 ppm (188 μg/m^3)	Same as Primary Standard

Table 4
Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[1]	National Standards[2]	
		Concentration[3]	*Primary*[3,4]	*Secondary*[3,5]
	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-hour	9.0 ppm (10 mg/m³)	9 ppm (10 mg/m³)	
SO_2[7]	1-hour	0.25 ppm (655 μg/m³)	0.075 ppm (196 μg/m³)	—
	3-hour	—	—	0.5 ppm (1300 μg/m³)
	24-hour	0.04 ppm (105 μg/m³)	0.14 ppm (for certain areas)[7]	—
	Annual Arithmetic Mean	—	0.030 ppm (for certain areas)[7]	—
PM_{10}[8]	24-hour	50 μg/m³	150 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	20 μg/m³	—	
$PM_{2.5}$[8]	24-hour	No Separate State Standard	35 μg/m³	Same as Primary Standard
	Annual Arithmetic Mean	12 μg/m³	12.0 μg/m³	15.0 μg/m³
Lead[9,10]	30-day Average	1.5 μg/m³	—	—
	Calendar Quarter	—	1.5 μg/m³ (for certain areas)[10]	Same as Primary Standard
	Rolling 3-Month Average	—	0.15 μg/m³	
Hydrogen sulfide	1-hour	0.03 ppm (42 μg/m³)	—	—
Vinyl chloride[9]	24-hour	0.01 ppm (26 μg/m³)	—	—
Sulfates	24-hour	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 particles when the relative humidity is less than 70%	—	—

ppm= parts per million by volume μg/m³ = micrograms per cubic meter mg/m³= milligrams per cubic meter

Source: CARB 2013

Notes:

1 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.

2 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 a 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 one. 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.

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

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

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

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

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

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

[9] 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.

[10] 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.

2.3.3 Local

While CARB is responsible for the regulation of mobile emission sources within the state, local air quality management district and air pollution control districts are responsible for enforcing standards and regulating stationary sources. The SBCAPCD is the regional agency responsible for the regulation and enforcement of federal, state, and local air pollution control regulations in the City of Goleta, where the proposed project is located, and the greater County of Santa Barbara. The SBCAPCD operates monitoring stations in the County, develops rules and regulations for stationary sources and equipment, prepares emissions inventory and air quality management planning documents, and conducts source testing and inspections.

Clean Air Plans

Since 1992, Santa Barbara County has adopted or amended rules implementing over 25 control measures controlling stationary source emissions. This has resulted in substantial reductions in ozone precursors (NO_x and ROCs). Prior to 1999, the County exceeded the national 1-hour O_3 standard, and in response to Clean Air Act requirements, the SBCAPCD prepared plans designed to bring the County into attainment of this standard. The SBCAPCD submitted a plan (maintenance plan) to CARB in November 2001 that demonstrated how the County would maintain the national 1-hour O_3 standard through the year 2015. This 2001 Clean Air Plan was approved by both CARB and the EPA. The 2001 Clean Air Plan also included a schedule to

revise the plan in 3 years, as required by the California Clean Air Act, which would show how the County would work toward meeting the state 1-hour O_3 standard.

The 2004 Clean Air Plan was prepared to address the California Clean Air Act mandates under Health and Safety Code Sections 40924 and 40925 that require areas update their attainment plans to attain the state 1-hour O_3 standard every 3 years. The 2004 Clean Air Plan was a 3-year update to the 2001 Clean Air Plan. Similarly, the 2007 Clean Air Plan provided a 3-year update to the SBCAPCD's 2004 Clean Air Plan. The 2007 Clean Air Plan was prepared to address both federal and state requirements; specifically, the federal requirements that pertain to maintenance provisions of the federal Clean Air Act, which apply to the County's current designation as an attainment area for the federal 8-hour O_3 standard.

The 2010 Clean Air Plan was adopted by the SBCAPCD Board on January 20, 2011, and is the current Board-adopted Clean Air Plan for the County. The 2010 Clean Air Plan is a 3-year update required to show how the SBCAPCD plans to meet the state 8-hour O_3 standard. The 2010 Clean Air Plan relies on the land use and population projections provided in the 2007 Santa Barbara County Association of Governments (SBCAG) Regional Growth Forecast. The SBCAG Regional Growth Forecast is generally consistent with the local plans; therefore, the 2010 Clean Air Plan is generally consistent with local general plans. In addition to planning for attainment of the state O_3 standard, the 2010 Clean Air Plan contains two chapters that are provided for informational purposes and are not regulatory in nature: a climate protection chapter, with an inventory of CO_2 emissions in the County, and a transportation and land use planning chapter (SBCAPCD and SBCAG 2011).

The draft 2013 Clean Air Plan is the sixth triennial update to the initial State Clean Air Plan adopted by the SBCAPCD Board in 1991. This plan was released for public review in June 2013; however, it has not yet been adopted by the SBCAPCD Board. Each of the SBCAPCD plan updates have implemented an "all feasible measures" strategy to ensure continued progress towards attainment of the state ozone standards, and this plan satisfies all state triennial planning requirements. In this plan, the SBCAPCD proposes to carry forward proposed stationary source control measures from the 2010 Clean Air Plan that are pending rule adoption except for two which have been reclassified as "further study" measures. However, the primary focus of the plan is on reducing marine shipping emissions. Marine shipping ozone precursor emissions have and will continue to account for the largest percentage of the County's inventory, over 50% (SBCAPCD and SBCAG 2013). While the CARB's future on-road vehicle standards for almost zero or zero tailpipe emissions (e.g., partial zero emission vehicles and zero emission vehicles) will result in substantial emission reductions, without strategies to gain emission reductions from marine shipping, very little additional progress can be made towards attainment of the state 8-hour ozone standard (SBCAPCD and SBCAG 2013). SBCAG is responsible for the development

and analysis of the 2013 Clean Air Plan's on-road mobile source emission estimates and transportation control measures. SBCAG also provides the SBCAPCD with socio-economic projections that form the basis for many of the stationary and area source growth forecasts for the 2013 Clean Air Plan.

SBCAG has prepared a 2040 Regional Transportation Plan–Sustainable Communities Strategy (RTP-SCS), which shows how the region will achieve the required GHG per-capita emission targets as well the co-benefits of reducing criteria pollutants. The 2040 RTP-SCS is based on a preferred land use and transportation scenario, which lays out one possible pattern of future growth and transportation investment for the region. The RTP-SCS preferred scenario emphasizes a transit-oriented development and infill approach to land use and housing, supported by complementary transportation and transit investments. Population and job growth is allocated principally within existing urban areas near public transit. Allocation of future growth directly addresses jobs–housing balance issues by emphasizing job growth in the North County and housing growth in the South County (SBCAG 2013).

Rules and Regulations

The SBCAPCD Rules and Regulations establish emission limitations and control requirements for various sources, based upon their source type and magnitude of emissions. The SBCAPCD rules applicable to the proposed project may include the following.

Rule 302 (Visible Emissions). Rule 302 prohibits emissions of visible air contaminants from any potential source of air contaminants. The rule prohibits air contaminants, other than water vapor, that are a certain level of darkness or opacity from being discharged for a combined period of more than 3 minutes in any 1 hour.

Rule 303 (Nuisance). This rule could apply to fugitive dust emitted during proposed construction activities or odors during operation. This rule states that a person shall not discharge air contaminants from any source that can cause injury, detriment, nuisance, or annoyance to any considerable number of persons, or that can endanger the comfort, repose, health, or safety of any such persons or their business or property.

Rule 311 (Sulfur Content of Fuels). The purpose of this rule is to limit the sulfur content in gaseous fuels, diesel and other liquid fuels, and solid fuels for the purpose of both reducing the formation of SO_x and particulates during combustion.

Rule 323 (Architectural Coatings). This rule requires manufacturers, distributors, and end-users of architectural and industrial maintenance coatings to reduce ROC emissions from the use of these coatings, primarily by placing limits on the ROC content of various coating categories.

Rule 329 (Cutback and Emulsified Asphalt Paving Materials). This rule applies to the application and sale of cutback and emulsified asphalt materials for the paving, construction, and maintenance of streets, highways, parking lots, and driveways, and reduces potential emissions by restricting the percent by volume of ROCs in asphalt material.

Rule 345 (Control of Fugitive Dust from Construction and Demolition Activities). Rule 345 establishes limits on the generation of visible fugitive dust emissions at demolition and construction sites. The rule includes measures for minimizing fugitive dust from on-site activities and from trucks moving on and off site.

2.4 BACKGROUND AIR QUALITY

2.4.1 Santa Barbara County Attainment Designation

An area is designated in attainment when it is in compliance with the NAAQS and/or CAAQS. These standards are set by the EPA or CARB for the maximum level of a given air pollutant that can exist in the outdoor air without unacceptable effects on human health or the public welfare. 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 are not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified."

The criteria pollutants of primary concern considered in this air quality assessment include O_3, NO_2, CO, PM_{10}, and $PM_{2.5}$. Although there are no ambient standards for ROCs or NO_x, they are important because they are precursors to O_3. The attainment classifications for these criteria pollutants are outlined in Table 5, Santa Barbara County Attainment Classification.

Table 5
Santa Barbara County Attainment Classification

Pollutant	Averaging Time	State Designation/Classification	National Designation/Classification
O_3	1-hour	Attainment	—
	8-hour	Nonattainment	Unclassifiable/Attainment
NO_2	1-hour, Annual Arithmetic Mean	Attainment	Unclassifiable/Attainment
CO	1-hour, 8-hour	Attainment	Attainment
SO_2	1-hour	Attainment	—
	24-hour	Attainment	—
	Annual Arithmetic Mean	—	—
PM_{10}	24-hour, Annual Arithmetic Mean	Nonattainment	Unclassifiable/Attainment
$PM_{2.5}$	24-hour	—	Unclassifiable/Attainment
	Annual Arithmetic Mean	Unclassified	Unclassifiable/Attainment
Lead (Pb)	Quarter	—	Unclassifiable/Attainment
	3-month average	—	Attainment
	30-day average	Attainment	—
Sulfates (SO_4)	24-hour	Attainment	—
Hydrogen sulfide (H_2S)	1-hour	Attainment	—
Vinyl chloride	24-hour	—	—
Visibility-reducing particles	8-hour (10:00 a.m.–6:00 p.m.)	Unclassified	—

Sources: CARB 2014b (state designation/classification); EPA 2014a (national designation/classification).

As shown in Table 5, Santa Barbara County is currently designated as an attainment or an unclassifiable/attainment area for all of the NAAQS (EPA 2014a). The County is currently designated as a nonattainment area for the state 8-hour O_3 standard and the state PM_{10} standard, but it is designated as attainment or unclassified for all other CAAQS (CARB 2014b).

2.4.2 Ambient Air Quality Monitoring Data

The SBCAPCD maintains 17 ambient air quality monitoring stations throughout the Santa Barbara County portion of South Central Coast Air Basin. The closest ambient air quality monitoring station to the project site is the Goleta Fairview monitoring station located at 380 North Fairview Road in Goleta, which measures O_3, NO_2, CO, PM_{10}, and $PM_{2.5}$. For SO_2, values from the University of California–Santa Barbara (UCSB) West Campus monitoring station were used in this analysis. The most recent background ambient air quality data from 2011 to 2013 are presented in Table 6, Ambient Air Quality Data. The number of days exceeding the AAQS is shown in Table 7, Frequency of Air Quality Standard Violations.

Table 6
Ambient Air Quality Data
(parts per million (ppm) unless otherwise indicated)

Pollutant	Averaging Time	2011	2012	2013	Most Stringent Ambient Air Quality Standard	Monitoring Station
O_3	1-hour	0.091	0.065	0.075	0.09	Goleta – Fairview
	8-hour	0.076	0.056	0.065	0.070	
NO_2	1-hour	0.052	0.041	0.013	0.100	Goleta – Fairview
	Annual	0.006	0.006	0.006	0.030	
CO	1-hour	2.0	1.6	1.0	20	Goleta – Fairview
	8-hour	0.57	0.65	N/A	9.0	
SO_2	24-hour	0.001	0.001	0.002	0.04	UCSB West Campus
	Annual	0.000	N/A	N/A	0.030	
PM_{10}	24-hour	70.0 µg/m³	48.0 µg/m³	44.0 µg/m³	50 µg/m³	Goleta – Fairview
	Annual	N/A	18.8 µg/m³	N/A	20 µg/m³	
$PM_{2.5}$	24-hour	18.4 µg/m³	29.0 µg/m³	20.5 µg/m³	35 µg/m³	Goleta – Fairview
	Annual	8.4 µg/m³	9.0 µg/m³	9.3 µg/m³	12.0 µg/m³	

Sources: CARB 2014c; EPA 2014b (for 1-hour CO).
Notes:
Data taken from CARB iADAM (CARB 2014c) or EPA AirData (EPA 2014b) represent the highest concentrations experienced over a given year.
µg/m³ = micrograms per cubic meter; N/A: insufficient data available to determine the value
Goleta – Fairview: 380 N. Fairview Avenue, Goleta, California
UCSB West Campus – Exxon Site 10, Isla Vista, Santa Barbara, California

Table 7
Frequency of Air Quality Standard Violations (Goleta – Fairview)

Year	Number of Days Exceeding Standard	
	State 8-Hour O_3	*State 24-Hour PM_{10}* [a]
2011	1	N/A (2)
2012	0	0.0 (0)
2013	0	N/A (0)

Source: CARB 2014c.
Notes:
[a] Measurements of PM_{10} are usually collected every 6 days. Number of days exceeding the standards is 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.
Exceedances of federal and state standards are only shown for ozone and PM_{10}. All other criteria pollutants did not exceed either federal or state standards during the years shown.
N/A = insufficient data available to determine the value.

As Table 6 demonstrates, air quality within the project region is in compliance with both CAAQS and NAAQS for NO_2, CO, and SO_2. As shown in Table 7, state 1-hour O_3 standards

were not exceeded at the Goleta – Fairview air monitoring station during the 3 years reported. The state 8-hour O_3 standard was, however, exceeded in 2011. The monitored PM_{10} levels exceeded the state 24-hour standard in 2011, but did not exceed the federal 24-hour PM_{10} standard during the 3 years reported. There was insufficient data available to determine if the $PM_{2.5}$ levels exceeded the federal standard in the years reported.

As Table 6 demonstrates, air quality within the project region is in compliance with both CAAQS and NAAQS for NO_2, CO, and SO_2. As shown in Table 7, the state 8-hour O_3 standard was exceeded in 2011. The monitored PM_{10} levels exceeded the state 24-hour standard in 2011.

2.5 THRESHOLDS OF SIGNIFICANCE

The State of California has developed guidelines to address the significance of air quality impacts based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (14 CCR 15000 et seq.), which provides guidance that a project would have a significant environmental impact if it would:

- Conflict with or obstruct the implementation of the applicable air quality plan
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O_3 precursors)
- Expose sensitive receptors to substantial pollutant concentrations
- Create objectionable odors affecting a substantial number of people.

In addition, Appendix G of the CEQA Guidelines indicates that where available, the significance criteria established by the applicable air quality management district or APCD may be relied upon to determine whether the proposed project would have a significant impact on air quality. The SBCAPCD has prepared criteria and thresholds for determining significance under CEQA. According to the SBCAPCD's *Scope and Content of Air Quality Sections in Environmental Documents* (SBCAPCD 2014a), a project would have a significant air quality effect on the environment if operation of the project would:

- Emit (from all project sources, both stationary and mobile) more than the daily trigger for offsets or air quality impact analysis set in the SBCAPCD New Source Review Rule,[2] for any pollutant (i.e., 240 pounds per day for ROC or NO_x; and 80 pounds per day for PM_{10});
- Emit 25 pounds per day or more of NO_x or ROC from motor vehicle trips only;
- Cause or contribute to a violation of any California or National Ambient Air Quality Standard (except ozone);
- Exceed the SBCAPCD health risk public notification thresholds adopted by the SBCAPCD Board for non-cancer risk; and
- Be inconsistent with the latest adopted federal and state air quality plans for Santa Barbara County.

In addition, pursuant to the City's *Environmental Thresholds and Guidelines Manual*, a significant adverse air quality impact may occur when a project, individually or cumulatively, triggers either of the following (City of Goleta 2002):

- Interferes with progress toward the attainment of the ozone standard by releasing emissions which equal or exceed the established long-term quantitative thresholds for NO_x and ROG; or
- Equals or exceeds the state or federal ambient air quality standards for any criteria pollutant (as determined by modeling).

The SBCAPCD does not currently have quantitative thresholds of significance in place for short-term construction emissions; however, the SBCAPCD uses 25 tons per year for ROC or NO_x as a guideline for determining the significance of construction impacts.

The City has established criteria for triggering modeling for CO based on the County's adopted guidance. According to the City's *Environmental Thresholds and Guidelines Manual*, "a project will have a significant air quality impact if it causes, by adding to the existing background CO levels, a CO "hot spot" where the California one-hour standard of 20 parts per million carbon monoxide is exceeded" (City of Goleta 2002). Typically, high CO concentrations are associated with roadways or intersections operating at an unacceptable level of service (LOS) and projects contributing to adverse traffic impacts may result in the formation of CO hotspots. Project screening for CO impacts is as follows:

[2] The SBCAPCD New Source Review Rule as it existed at the time the SBCAPCD Environmental Review Guidelines were adopted in October 1995 (SBCAPCD 2014a).

1) If a project contributes less than 800 peak hour trips, then CO modeling is not required.
2) Projects contributing more than 800 trips to an existing congested intersection at LOS D or below, or will cause an intersection to reach LOS D or below, may be required to model for CO impacts. However, projects that will incorporate intersection modifications to ease traffic congestion are not required to perform modeling to determine potential CO impacts.

The City does not specify quantitative thresholds of significance for short-term construction emissions because they have already been accounted for in the 2010 Clean Air Plan. However, because the region does not meet the state standards for ozone and PM_{10}, the City of Goleta requires implementation of standard emission and dust control techniques for all construction, as outlined in GP/CLUP Policy CE 12.3 and listed as mitigation measures in the GP/CLUP FEIR (Air Quality), to ensure that these emissions remain less than significant.

2.6 ANALYSIS METHODOLOGY

2.6.1 Construction Emissions

Although quantitative thresholds of significance are not currently established for short-term emissions, CEQA requires that short-term impacts such as exhaust emissions from construction equipment and fugitive dust generation during grading be discussed in the environmental document. In the interest of public disclosure, the SBCAPCD recommends that construction-related NO_x, ROC, PM_{10} and $PM_{2.5}$ emissions from diesel- and gasoline-powered equipment, paving, and other activities be quantified. Pollutant emissions associated with temporary construction activity were quantified using the California Emissions Estimator Model (CalEEMod), Version 2013.2.2, available online (http://www.caleemod.com). Default values provided by the program were used where detailed project information was not available.

2.6.2 Operational Emissions

The SBCAPCD recommends using CalEEMod for project-level review because it uses current emission factors and updated default values (SBCAPCD 2014a). Consistent with SBCAPCD guidance, CalEEMod was utilized to estimate operational area and mobile source emissions. Trip generation rates used to estimate long-term, operational emissions were identified in the proposed project trip generation analysis conducted by Associated Transportation Engineers (ATE 2014). To estimate project-specific vehicle emissions and other emission calculations using CalEEMod, the year 2018 was modeled to reflect the anticipated year of project operation. Other available project-specific data were provided to supplement the default data in the model.

2.6.3 Siting Recommendations

In 2005, CARB developed an *Air Quality and Land Use Handbook: A Community Health Perspective* ("CARB handbook"), which was intended to serve as a general reference guide for evaluating and reducing air pollution impacts associated with new land use development projects. The CARB handbook addresses the importance of considering health risk issues when siting sensitive land uses (i.e., new residences, schools, day care centers, playgrounds, and medical facilities) in the vicinity of intensive air emission sources and recommended against siting sensitive land uses within 500 feet of a freeway or high-traffic roads (CARB 2005). This recommendation is based on a number of proximity studies conducted in areas throughout the state that link traffic-related air pollutant emissions to a number of health effects in children, such as reduced lung function, increased asthma and bronchitis, and increased medical visits (SBCAPCD 2014a). These epidemiological studies differ from site-specific health risk assessments because they do not attempt to quantify the traffic-related air pollutant emissions and calculate exposure values to determine cancer risk. In addition, the studies do not discriminate between exposure to particulate matter and gaseous air pollutants; while particulate pollution is suspected as contributing the most to the adverse health effects, studies have not yet determined which specific pollutants and sources (e.g., diesel particulate, re-entrained roadway dust particulate, NO_2 vehicle exhaust, diesel trucks, gasoline cars) are responsible (SBCAPCD 2009). U.S. Highway 101, through Santa Barbara County, experiences traffic volumes within the range where health effects have been observed. Since the publication of the CARB handbook, additional studies have been conducted that further support the recommendations (SBCAPCD 2014b).

In 2012, CARB staff prepared a document entitled *Status of Research on Potential Mitigation Concepts to Reduce Exposure to Nearby Traffic Pollution*. It provides information on scientific research that has been conducted on various building-related and site mitigation concepts suggested as potentially effective approaches for reducing traffic-related pollution exposure to those living near high traffic roadways. This paper is not intended as guidance for any specific project and does not provide a methodology for determining appropriate mitigation measures for purposes of compliance with CEQA (CARB 2012). However, it does provide useful information that could be considered when evaluating potential mitigation approaches.

To provide consistency to lead agencies, project proponents, and the general public throughout the state, the California Air Pollution Control Officers Association (CAPCOA) prepared a guidance document, entitled "Health Risk Assessments for Proposed Land Use Projects," to assist lead agencies in complying with the requirements of CEQA when projects may involve exposure to TACs. This document focuses on the acute, chronic, and cancer impacts of sources that may undergo CEQA review. It also outlines the recommended procedures to identify when a

project should undergo further risk evaluation, how to conduct the health risk assessment, how to engage the public, what to do with the results from the health risk assessment, and what mitigation measures may be appropriate for various land use projects (SBCAPCD 2014b).

The SBCAPCD has advised that with respect to health risks associated with locating sensitive land uses in proximity to freeways and other high traffic roadways, health risk assessment modeling may not thoroughly characterize all the health risk associated with nearby exposure to traffic-generated pollutants. Therefore, the SBCAPCD does not recommend using health risk assessment modeling as a tool for assessing health risk impacts for these types of projects (SBCAPCD 2014b).

Pursuant to direction provided by SBCAPCD staff for the proposed project, the SBCAPCD's current outlook on the siting issue is that in the event that the project cannot avoid placing sensitive receptors within 500 feet of U.S. Highway 101, then the impact should be mitigated as much as feasible through project design and operational features (Pearson, pers. comm. 2014). Examples of these features include maximizing the distance between the freeway and receptors, use of air filtration systems, structural and/or vegetative barriers/filtration, and placement of windows and air intake vents (Pearson, pers. comm. 2014).

2.6.4 Odors

The potential for the proposed project to either cause or subject a considerable number of people to odors or other air quality nuisance problems is also analyzed. A public nuisance is defined by SBCAPCD Rule 303 as "such quantities of air contaminants or other material in violation of Section 41700 of the Health and Safety Code which may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or to the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." Although the SBCAPCD has not adopted quantitative thresholds of significance for odor impacts, the SBCAPCD recommends the development of an Odor Abatement Plan for projects that may generate nuisance odors that may affect a substantial number of people.

2.6.5 Clean Air Plan Consistency

Consistency with land use and population forecasts in local and regional plans, including the Clean Air Plan, is required under CEQA for all projects. SBCAPCD further describes consistency with the Clean Air Plan for projects subject to these guidelines, which means that direct and indirect emissions associated with the project are accounted for in the Clean Air Plan's emissions growth assumptions, and the project is consistent with policies adopted in the Clean

Air Plan. The Clean Air Plan relies primarily on the land use and population projections provided by the SBCAG and CARB on-road emissions forecast as a basis for vehicle emission forecasting. The 2010 Clean Air Plan utilized SBCAG's Regional Growth Forecast 2005–2040, adopted August 2007, to project population growth and associated air pollutant emissions for all of the Santa Barbara County incorporated and unincorporated areas (SBCAPCD 2014a).

2.6.6 Cumulative Impacts

Cumulative air quality impacts are the effect of long-term emissions of the proposed project plus any existing emissions at the same location, as well as the effect of long-term emissions of reasonably foreseeable similar projects, on the projected regional air quality or localized air pollution in the County. As discussed in the SBCAPCD's *Scope and Content of Air Quality Sections in Environmental Documents*, the cumulative contribution of project emissions to regional levels should be compared with existing programs and plans, including the most recent Clean Air Plan.

Due to the County's nonattainment status for O_3 and its regional nature, if a project's emissions from traffic sources of either of the O_3 precursors, ROC or NO_x, exceed the long-term emission thresholds, then the project's cumulative impacts will be considered significant. For projects that do not have significant O_3 precursor emissions or localized pollutant impacts, if emissions have been taken into account in the most recent Clean Air Plan growth projections, regional cumulative impacts may be considered less than significant. When a project's emissions exceed the thresholds and are clearly not accounted for in the most recent Clean Air Plan growth projections, then the project is considered to have significant cumulative impacts that must be mitigated to a level of less than significant.

2.7 IMPACT ANALYSIS

This section evaluates the air quality impacts associated with the proposed project. The SBCAPCD significance criteria described in Section 2.5, Thresholds of Significance, were used to evaluate impacts associated with the construction and operation of the proposed project.

2.7.1 Construction Impacts

Construction of the proposed project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. 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.

Pollutant emissions associated with construction activity were quantified using CalEEMod. Default values provided by the program were used where detailed project information was not available. A detailed depiction of the construction schedule—including information regarding phasing, equipment utilized during each phase, haul trucks, vendor trucks, and worker vehicles—is included in Section 1.3.1, Project Description – Construction, of this report.

Implementation of the project would generate construction-related air pollutant emissions from three general activity categories: entrained dust, equipment and vehicle exhaust emissions, and architectural coatings. 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. To account for dust-control measures in the calculations, it was assumed that the active sites would be watered at least three times daily, resulting in an approximately 61% reduction, to represent compliance with SBCAPCD standard dust control measures. Because the County is currently in nonattainment for the state PM_{10} standard, standard dust control measures are required for all discretionary construction activities (regardless of the significance of the fugitive dust impacts), based on policies in the 1979 Air Quality Attainment Plan (SBCAPCD 2014a).

Exhaust from internal combustion engines used by construction equipment and hauling trucks (dump trucks) and vendor trucks (delivery trucks) and worker vehicles would result in emissions of NO_x, ROC, CO, SO_x, PM_{10}, and $PM_{2.5}$. The application of architectural coatings, such as exterior/interior paint and other finishes, would also produce ROC emissions; however, the contractor is required to procure architectural coatings from a supplier in compliance with the requirements of SBCAPCD's Rule 323 (Architectural Coatings). Paving of the parking lot and other surfaces would similarly produce ROC emissions, but would be required to comply with Rule 329 (Cutback and Emulsified Asphalt Paving Materials), which restricts the percent by volume of ROCs in asphalt material.

Table 8, Estimated Daily Maximum Construction Emissions, shows the estimated maximum unmitigated daily summer and winter construction emissions associated with construction of the proposed project.

Table 8
Estimated Maximum Daily Construction Emissions
(pounds per day unmitigated)

Year	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer						

Table 8
Estimated Maximum Daily Construction Emissions
(pounds per day unmitigated)

Year	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2015	5.81	63.46	27.46	0.04	3.58	3.01
2016	31.35	25.13	29.59	0.04	2.95	1.93
2017	35.40	42.62	42.89	0.06	4.10	2.88
Summer Maximum Daily	**35.40**	**63.46**	**42.89**	**0.06**	**4.10**	**3.01**
Winter						
2015	5.83	63.48	27.85	0.04	3.58	3.01
2016	31.55	25.30	33.43	0.04	2.95	1.93
2017	35.59	42.79	46.67	0.06	4.10	2.88
Winter Maximum Daily	**35.59**	**63.48**	**46.67**	**00.06**	**4.10**	**3.01**

Notes: See Appendix A for detailed results.
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

As previously mentioned in Section 2.5, Thresholds of Significance, although the SBCAPCD does not currently have quantitative thresholds of significance in place for short-term or construction emissions, it uses 25 tons per year for ROC or NO_x as a guideline for determining the significance of construction impacts. Table 9, Estimated Annual Construction Emissions, presents estimated annual construction emissions in 2015, 2016, and 2017.

Table 9
Estimated Annual Construction Emissions
(tons per year unmitigated)

Year	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2015	0.38	3.04	2.92	0.00	0.27	0.19
2016	4.10	3.31	4.15	0.01	0.38	0.25
2017	2.03	1.57	1.99	0.00	0.18	0.12
Maximum Annual Total	**4.10**	**3.31**	**4.15**	**0.01**	**0.38**	**0.25**
SBCAPCD Guideline	*25*	*25*	—	—	—	—
Guideline Exceeded?	No	No				

Notes: See Appendix B for detailed results.
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

As shown in Table 9, the construction of the proposed project would not exceed the SBCAPCD's general rule of 25 tons per year of ROC or NO_x used for determining significance of construction exhaust emissions during 2015, 2016, or 2017. Therefore, impacts on air quality during construction would be less than significant.

Pre-construction Export

As discussed in Section 1.3.1, Project Description – Construction, of this report, the project would include pre-construction export of stockpiled soil currently on the site. Table 10, Pre-construction Export Estimated Daily Maximum Construction Emissions, shows the estimated maximum unmitigated daily summer and winter construction emissions associated with export of existing stockpiled material.

Table 10
Pre-construction Export Estimated Maximum Daily Construction Emissions
(pounds per day unmitigated)

Year	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer						
2014	10.06	134.27	108.07	0.23	8.33	4.03
Winter						
2014	11.57	137.24	132.71	0.23	8.34	4.04

Notes: See Appendix A for detailed results.
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

Table 11, Pre-construction Export Estimated Annual Construction Emissions, presents estimated annual construction emissions from 10,000 one-way haul truck trips, worker trips, and operation of on-site equipment in 2014.

Table 11
Pre-construction Export Estimated Annual Construction Emissions
(tons per year unmitigated)

Year	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2014	0.19	2.36	2.08	0.00	0.15	0.07
SBCAPCD Guideline	*25*	*25*	—	—	—	—
Guideline Exceeded?	No	No				

Notes: See Appendix B for detailed results.
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

As shown in Table 11, the pre-construction export for the proposed project would not exceed the SBCAPCD's general rule of 25 tons per year of ROC or NO_x used for determining significance of construction exhaust emissions during 2015, 2016, or 2017. Therefore, impacts on air quality during pre-construction would be less than significant.

Toxic Air Contaminants

In regards to toxic air contaminants (TACs) potentially generated during project construction, the project would result in emissions of diesel particulate matter from heavy construction equipment and trucks accessing the site. Diesel particulate matter is characterized as a TAC by the State of California and the Office of Environmental Health Hazard Assessment has identified carcinogenic and chronic noncarcinogenic effects from long-term exposure, but has not identified health effects due to short-term exposure to diesel particulate matter. Due to the temporary nature of project construction, and because the project would not generate substantial diesel emissions from construction equipment or trucks, the project would not result in a significant health risk to receptors in the vicinity of the proposed project.

Fugitive Dust Mitigation Measures

As stated previously, the SBCAPCD has not established construction PM_{10} emissions thresholds. However, because the County is currently in nonattainment for the state PM_{10} standard, dust mitigation measures are required for all discretionary construction activities, regardless of the significance of the fugitive dust impacts, based on policies within the 1979 Air Quality Attainment Plan. These measures are required for all projects involving earthmoving activities regardless of the project size or duration. Proper implementation of these measures is assumed to fully mitigate fugitive dust emissions. Nonetheless, the following mitigation measure will be implemented to ensure that PM_{10} emissions do not result in adverse impacts:

MM-1 Consistent with SBCAPCD requirements, the following dust control measures shall be implemented by the contractor/builder to reduce fugitive dust PM_{10} emissions generated during earthmoving construction activities:

a. During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this should include wetting down such areas in the late morning and after work is completed for the day. Increased watering frequency should be required whenever the wind speed exceeds 15 mph. Reclaimed water should be used whenever possible. However, reclaimed water should not be used in or around crops for human consumption.

b. Minimize amount of disturbed area and reduce on-site vehicle speeds to 15 miles per hour or less.

c. If importation, exportation, and stockpiling of fill material are involved, soil stockpiled for more than 2 days shall be covered, kept moist, or treated with

soil binders to prevent dust generation. Trucks transporting fill material to and from the site shall be tarped from the point of origin.

d. Gravel pads shall be installed at all access points to prevent tracking of mud onto public roads.

e. After clearing, grading, earthmoving, or excavation is completed, treat the disturbed area by watering or revegetating, or by spreading soil binders until the area is paved or otherwise developed so that dust generation will not occur.

f. The contractor or builder shall designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust off site. Their duties shall include holiday and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the SBCAPCD prior to land use clearance for map recordation and land use clearance for finish grading of the structure.

Plan Requirements and Timing: All requirements shall be shown on grading and building plans and as a note on a separate information sheet to be recorded with the Parcel Map prior to or concurrent with map recordation. Condition shall be adhered to throughout all grading and construction periods.

Monitoring: The Planning and Environmental Services Director, or designee, shall ensure measures are on project plans and maps to be recorded. Planning and Environmental Review Department staff shall ensure compliance on site. SBCAPCD inspectors shall respond to nuisance complaints.

Equipment Exhaust Control Measures

Particulate matter emissions from diesel engines are classified as carcinogenic by the State of California. The following is a list of regulatory requirements and control strategies that should be implemented to the maximum extent feasible. Measures should be shown on grading and building plans, and should be adhered to throughout grading, hauling, and construction activities.

The following measures are required by state law (SBCAPCD 2014a):

- All portable diesel-powered construction equipment shall be registered with the California Air Resources Board's (CARB's) portable equipment registration program OR shall obtain a SBCAPCD permit.
- Fleet owners of mobile construction equipment are subject to the CARB Regulation for In-use Off-road Diesel Vehicles (Title 13 California Code of Regulations, Chapter 9, Section 2449), the purpose of which is to reduce diesel particulate matter and criteria pollutant emissions from in-use (existing) off-road diesel-fueled vehicles.
- All commercial diesel vehicles are subject to Title 13, Section 2485 of the California Code of Regulations, limiting engine idling time. Idling of heavy-duty diesel construction equipment and trucks during loading and unloading shall be limited to five minutes; electric auxiliary power units should be used whenever possible.

2.7.2 Operational Impacts

Operations of the project would produce NO_x, ROC, CO, SO_x, PM_{10}, and $PM_{2.5}$ emissions primarily from vehicular trips to and from the proposed project. Specifically, the proposed project would impact air quality through vehicular traffic generated by residences of the senior housing and workforce housing. Emissions associated with project-generated daily traffic were estimated based on the trip generation rates provided by Associated Transportation Engineers; see Section 1.3.2, Project Description Operation, for details. CalEEMod default data, including temperature, trip characteristics, variable start information, emission factors, and trip distances, were conservatively used for the model inputs. Project-related traffic was assumed to consist of a mixture of vehicles in accordance with the model outputs for traffic. Emission factors representing the vehicle mix and emissions for the year 2018, when the project would be in its first year of operation, were used to estimate emissions.

In addition to estimating mobile source emissions, CalEEMod was also used to estimate emissions from the project area sources, which include space and water heating, gasoline-powered landscape maintenance equipment, consumer products, and architectural coatings for building maintenance. Emissions for the 132-unit senior housing development (119,710 gross square feet) and the 228-unit workforce housing development (218,019 gross square feet) were

based on CalEEMod defaults for low-rise apartments,[3] and emissions for a 2-acre public neighborhood park were estimated using model default values for a city park.

Table 12, Estimated Maximum Daily Unmitigated Operational Emissions, presents the maximum daily summer and winter emissions associated with operation of the proposed project. Details of the emission calculations are provided in Appendix A.

Table 12
Estimated Maximum Daily Unmitigated Operational Emissions
(pounds per day)

	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer						
Area Source Emissions	17.61	1.35	30.34	0.01	0.24	0.24
Vehicular Source Emissions	6.74	16.52	73.11	0.15	11.74	3.27
Combined Total Emissions	**24.35**	**17.87**	**103.45**	**0.16**	**11.98**	**3.51**
Vehicle Source Emissions Threshold	*25*	*25*	—	—	*N/A*	—
Threshold Exceeded?	No	No			N/A	
Area + Vehicle Source Emissions Threshold	*240*	*240*			*80*	
Threshold Exceeded?	No	No			No	
Winter						
Area Source Emissions	17.61	1.35	30.34	0.01	0.24	0.24
Vehicular Source Emissions	7.35	17.70	81.65	0.15	11.74	3.27
Combined Total Emissions	**24.96**	**19.05**	**111.99**	**0.16**	**11.98**	**3.51**
Vehicle Source Emissions Threshold	*25*	*25*	—	—	*N/A*	—
Threshold Exceeded?	No	No			N/A	
Area + Vehicle Source Emissions Threshold	*240*	*240*			*80*	
Threshold Exceeded?	No	No			No	

Notes: See Appendix A for detailed results.
Unmitigated emissions represent project operations without incorporation of project features.

[3] To input different trip generation values for the senior housing and workforce housing, those land uses were inputted separately in CalEEMod as low-rise apartments and mid-rise apartments, respectively. For consistency, the mid-rise apartment values were replaced with the low-rise apartment values, where necessary. Low-rise apartments are characterized as one or two levels, and mid-rise apartments are characterized as more than two levels and less than nine levels. Although the project would include buildings that are three levels, the low-rise apartment default values were utilized because they are more conservative; however, the majority of the default values were the same for the low-rise and mid-rise apartments.

Table 13, Estimated Maximum Daily Mitigated Operational Emissions, presents the maximum daily summer and winter emissions associated with operation of the proposed project. Details of the emission calculations are provided in Appendix A.

Table 13
Estimated Maximum Daily Mitigated Operational Emissions
(pounds per day)

	ROC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer						
Area Source Emissions	15.41	1.16	30.26	0.01	0.23	0.23
Vehicular Source Emissions	6.36	14.46	64.89	0.13	9.98	2.78
Combined Total Emissions	**21.77**	**15.62**	**95.15**	**0.14**	**10.21**	**3.01**
Vehicle Source Emissions Threshold	*25*	*25*	—	—	*N/A*	—
Threshold Exceeded?	No	No			N/A	
Area + Vehicle Source Emissions Threshold	*240*	*240*			*80*	
Threshold Exceeded?	No	No			No	
Winter						
Area Source Emissions	15.41	1.16	30.25	0.01	0.23	0.23
Vehicular Source Emissions	6.97	15.48	73.45	0.13	9.98	2.78
Combined Total Emissions	**22.38**	**16.64**	**103.70**	**0.14**	**10.21**	**3.01**
Vehicle Source Emissions Threshold	*25*	*25*	—	—	*N/A*	—
Threshold Exceeded?	No	No			N/A	
Area + Vehicle Source Emissions Threshold	*240*	*240*			*80*	
Threshold Exceeded?	No	No			No	

Notes: See Appendix A for detailed results.
Mitigated emissions represent project operations with incorporation of project features.

As shown in Tables 12 and 13, the proposed project would not generate vehicular emissions that would exceed the ROC or NO_x significance thresholds of 25 pounds per day. Additionally, the project's combined area and vehicle emissions would not exceed the ROC and NO_x significance thresholds of 240 pounds per day or the PM_{10} significance threshold of 80 pounds per day.

Micro-scale Impact Analysis

Based on the project's *Traffic, Circulation, and Parking Study*, the senior and workforce housing is forecast to generate 174 AM peak hour trips, and 183 PM peak hour trips (ATE 2014). As the project would not contribute more than 800 trips to an existing congested intersection at LOS D or below and would not cause an intersection to reach LOS D or below, a quantitative CO hot

spot impact analysis is not required, and impacts related to microscale CO concentrations are anticipated to be less than significant.

In addition, because of continued improvement in vehicular emissions at a rate faster than the rate of vehicle growth and/or congestion and very low background concentrations relative to the CAAQS and NAAQS, the potential for CO hot spots in the South Central Coast Air Basin is steadily decreasing. Furthermore, per the SBCAPCD, due to the relatively low background ambient CO levels in the County, localized CO impacts associated with congested intersections are not expected to exceed the CO health-related air quality standards (SBCAPCD 2014a).

2.7.3 Siting of Sensitive Receptors

As documented by CARB and in subsequent health studies, living in proximity to freeways and high traffic roadways may lead to adverse health effects beyond those associated with regional air pollution. The proposed project is estimated to be located approximately 280 feet south from the closest U.S. Highway 101 lane and approximately 80 feet south from the Union Pacific Railroad line. The proposed project would install a 6-foot high wall along the western perimeter of project site and an 8-foot high wall along the northern perimeter, which includes the area between the proposed residential development and the U.S. Highway 101 and the Union Pacific Railroad.

The proposed project will include installation of a Hydronic forced air unit for heating and ventilation. The Hydronic forced air unit incorporates ducting to each room, and circulates filtered outside air in fan mode and filtered outside air in heating mode. To heat the outside air, the Hydronic forced air unit circulates hot water from the water heater through a copper coil radiator. As air is passed over this radiator, it is heated and distributed through the ducting. When not heated, the temperature of the ventilated indoor air will be the same temperature as the outdoor ambient air. To provide the option for cooling, the project will provide ceiling fans within the rental units. The provision of fans will allow residents the option to cool their apartments without opening a window.

According to CARB's *Status of Research on Potential Mitigation Concepts to Reduce Exposure to Nearby Traffic Pollution*, soundwalls appear to reduce pollutant concentrations near the roadway; near-road concentrations (within 15–20 meters (49–66 feet)) have shown reductions up to about 50% (CARB 2012). However, in some studies higher levels of pollution were seen behind the barrier and at a distance farther away from the soundwalls and roadways. As such, it cannot be concluded with certainty that the provision of a soundwalls would effectively reduce pollutant concentrations, although the use of walls or other site-related measures, in conjunction with additional mitigation concepts, could reduce exposure to traffic pollution near roadways.

Furthermore, the SBCAPCD regards structural barriers as project features that would mitigate potential impacts.

The City's existing General Plan Land Use map designates numerous parcels within the area south of U.S. Highway 101, north of Hollister Avenue, west of Aero Camino, and east of Ellwood Station Road, as medium-density residential development. This area includes developed, pending development, and undeveloped parcels that are within 500 feet of U.S. Highway 101. During environmental review, the City has consistently relied upon implementation of ventilation systems with filters to remove particulate matter and filter maintenance requirements as effective mitigation to reduce potential health-related impacts to less than significant. Implementation of avoidance measures for this project (observing a 500-foot building setback from the edge of the U.S. Highway 101) is not considered feasible as it would significantly reduce the ability to develop housing on the project site, in an area of the County where new housing is needed.

As discussed in Section 2.6.3, Siting Recommendations, the SBCAPCD does not recommend using health risk assessment modeling as a tool for assessing health risk associated with locating sensitive land uses in proximity to freeways because it may not thoroughly characterize all the health risk associated with nearby exposure to traffic-generated pollutants (SBCAPCD 2014b). However, the SBCAPCD considers air filtration systems and placement of windows and air intake vents as project features that could mitigate impacts to residential receptors, in addition to the abovementioned provision of structural and/or vegetative barriers/filtration.

Because the project would entail residential development within 500 feet of U.S. Highway 101 and because the SBCAPCD does not currently recommend a quantitative method to assess and mitigate potential impacts, the project would result in a potentially significant impact related to siting sensitive receptors, and mitigation measures are required to reduce impacts to less than significant.

MM-2 To address potential indoor air pollution impacts and potential adverse health effects associated with the proposed residential development within proximity to U.S. Highway 101, the following mitigation actions shall be applied to residential units at the project site within 500 feet of the edge of the nearest travel lane of the U.S. Highway 101:

a. Forced air ventilation with filters on outside air intake ducts must be provided for all residential units proposed on the project site and common indoor facilities at the project site. The filters must be capable of removing at least 85% of the particulate matter including fine particulate matter (1.0 to

3.0 microns) in accordance with Minimum Efficiency Reporting Value (MERV) 52.2 standards (such as filters rated at MERV 13 or better for enhanced particulate removal efficiency).

b. The owner is responsible for maintaining the filters in accordance with the manufacturer's recommendations.

c. The owner must provide a U.S. Highway 101 property lease disclosure to potential occupants within the project site regarding the site's proximity to U.S. Highway 101 and that there is the potential for exposure to traffic-generated pollutants, such as diesel particulate matter, emitted by trucks and trains. Although the owner will provide filter maintenance, the disclosure must also explain the need for proper filter maintenance. This disclosure must be accompanied by a plan for keeping the notification documents updated and distributed by facility property management to tenants upon signing of lease agreements.

Plan Requirements and Timing: The above-noted requirements must be incorporated into the project and shown on all applicable building plans provided when plans are submitted to the City for plan check before the City issues any building permits for any residential or common building. The property lease disclosure, plan to keep notification documents updated and distributed to tenants, and the specifications for the filters, must also be submitted to the Planning and Environmental Review Director, or designee, for review before issuance of building permits for any residential or common building.

Monitoring: The Planning and Environmental Services Director, or designee, must ensure that all of the these requirements are met and reflected on all applicable plans before the City issues any building permits and verify compliance with installation before the City issues a certificate of occupancy for each residential and common building covered by this requirement.

Residual Impact. These mitigation actions would provide for the removal of particulates before they enter the indoor environment, thereby reducing the overall exposure (time spent indoors and outdoors) of individual residents. The reduction in indoor exposure to TACs would reduce impacts to less than significant.

2.7.4 Odors

Construction Odor Impacts

Potential sources that may emit odors during construction activities include diesel equipment and gasoline fumes and solvents from the application of paint. Odors from these sources would be localized and generally confined to the project site. The release of potential odor-causing compounds would tend to be during the work day, when many residents would not be at home. Furthermore, the SBCAPCD rules restrict the ROC content (the source of odor-causing compounds) in paints and in asphalt paving material. Such odors are temporary and generally occur at magnitudes that would not affect substantial numbers of people. Therefore, the proposed project construction would not cause an odor nuisance, and impacts associated with odors during construction would be considered less than significant.

Operational Odor Impacts

Certain projects have the potential to cause significant odor impacts because of the nature of their operation and their location. Examples include fast food restaurants, bakeries, and coffee roasting facilities. Other projects may be new developments (e.g., residential areas or sensitive receptors) that are located downwind of existing sources of odor (SBCAPCD 2014a). The proposed project entails the operation of a residential community and would not result in the creation of a land use that is commonly associated with odors. Therefore, project operations would result in a less-than-significant odor impact.

2.7.5 Clean Air Plan Consistency

Consistency with the Clean Air Plan means that direct and indirect emissions associated with the project are accounted for in the Clean Air Plan's emissions growth assumptions, and the project is consistent with policies adopted in the Clean Air Plan. The Final 2010 Clean Air Plan was adopted by the SBCAPCD Board on January 20, 2011, and is the current Clean Air Plan for the County.

The City's General Plan Land Use Designation for the project site is Residential Medium Density. The City's Inland Zoning Ordinance (Article III, Chapter 35, Goleta Municipal Code), designates the project site as zone district DR-20 (Design Residential, 20 dwelling units per gross acre), and land use code Moderate Density Multi-Family.

The project involves construction of 360 residential rental units in eight buildings on a 16.2-gross-acres site, resulting in a density of 22.2 dwelling units per gross acre. The project would not conflict with or propose to change existing land uses or applicable land use policies as

designated in the City of Goleta General Plan; therefore, the project was included in the SBCAG 2007 Regional Growth Forecast. As such, the project would not conflict with the applicable air quality plan, which currently is the 2010 Clean Air Plan, and the proposed project would result in a less-than-significant impact.

2.7.6 Cumulative Impacts

In analyzing cumulative impacts from the proposed project, the assessment must specifically evaluate a project's contribution to the cumulative increase in pollutants for which the County is designated as nonattainment for the NAAQS or CAAQS. The County is currently in attainment of NAAQS and is in attainment for all CAAQS with the exception of the state 8-hour O_3 standard and the state standards for PM_{10}. Construction and operation of the proposed project would generate emissions of ROC and NO_x (O_3 precursors) and PM_{10} emissions; however, the proposed project would not exceed SBCAPCD guidance for annual construction emissions or SBCAPCD thresholds for daily operational emissions. Since implementation of the project would result in less-than-significant short-term impacts to air quality associated with construction and less-than-significant long-term impacts associated with operation of the project, the proposed project's contribution to the County's nonattainment status for state 8-hour O_3 and PM_{10} standards would be less than cumulatively considerable. As the project would not result in significant O_3 precursor emissions or PM_{10} emissions, and project-generated emissions have been taken into account in the SBCAPCD 2010 Clean Air Plan growth projections, cumulative impacts would be less than significant.

3.0 GREENHOUSE GAS EMISSIONS

3.1 EXISTING CONDITIONS

3.1.1 The Greenhouse Effect and Greenhouse Gases

Climate change refers to any significant change in measures of climate, such as temperature, precipitation, or wind, lasting for an extended period (decades or longer). Gases that trap heat in the atmosphere are often called GHGs. The greenhouse effect traps heat in the troposphere through a threefold process: 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 back toward the Earth. This "trapping" of the long-wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect.

Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), and water vapor (H_2O). Some GHGs, such as CO_2, CH_4, and N_2O, can occur naturally and are emitted into to 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. Emissions of CO_2 are largely byproducts of fossil-fuel combustion, whereas CH_4 results mostly from off-gassing associated with agricultural practices and landfills. Man-made GHGs, which have a much greater heat-absorption potential than CO_2, include fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and nitrogen trifluoride (NF_3), which are associated with certain industrial products and processes (CAT 2006).

The greenhouse effect is a natural process that contributes to regulating the Earth's temperature. Without it, the temperature of the Earth would be about 0°F (−18°C) instead of its current 57°F (14°C). Global climate change concerns are focused on whether human activities are leading to an enhancement of the greenhouse effect.

The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP). The GWP varies between GHGs; for example, the GWP of CH_4 is 21, and the GWP of N_2O is 310. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG gas emissions are typically measured in terms of pounds or tons of CO_2 equivalent (CO_2E).[4]

[4] The CO_2 equivalent for a gas is derived by multiplying the mass of the gas by the associated GWP, such that metric tons of CO_2E = (metric tons of a GHG) × (GWP of the GHG). For example, the GWP for CH_4 is 21. This means that emissions of 1 metric ton of CH_4 are equivalent to emissions of 21 metric tons of CO_2.

3.1.2 Contributions to Greenhouse Gas Emissions

In 2012, the United States produced 6,501.5 million metric tons (MMT) of CO_2E (EPA 2014c). The primary GHG emitted by human activities in the United States was CO_2, representing approximately 83% of total GHG emissions. The largest source of CO_2, and of overall GHG emissions, was fossil-fuel combustion, which accounted for approximately 78% of the CO_2 emissions.

According to the 2012 GHG inventory data compiled by CARB for the California Greenhouse Gas Inventory for 2000–2012, California emitted 459 MMT CO_2E of GHGs, including emissions resulting from out-of-state electrical generation (CARB 2014d). The primary contributors to GHG emissions in California are transportation, industry, electric power production from both in-state and out-of-state sources, agriculture, and other sources, which include commercial and residential activities. These primary contributors to California's GHG emissions and their relative contributions in 2012 are presented in Table 14, Greenhouse Gas Sources in California.

Table 14
Greenhouse Gas Sources in California (2012)

Source Category	Annual GHG Emissions (MMT CO_2E)	% of Total[a]
Transportation	167.38	36%
Electricity generation	95.09[b]	21%
Residential uses	28.09	6%
Commercial uses	14.20	3%
Industrial uses	89.16	19%
Recycling and waste	8.49	2%
High GWP substances	18.41	4%
Agriculture	37.86	8%
Totals	**458.68**	**100%**

Source: CARB 2014d.
Notes:
[a] Percentage of total has been rounded.
[b] Includes emissions associated with imported electricity, which account for 44.07 MMT CO_2E annually.

According to the City of Goleta's Climate Action Plan GHG inventory, the City produced 325,532 MT CO_2E in 2007, excluding stationary sources. This is equivalent to the annual GHG emissions generated by approximately 68,000 passenger vehicles (City of Goleta 2014a). As shown in Table 15, the largest source of emissions within the City is building energy emissions (including electricity and natural gas for residential and nonresidential buildings), which contributed 44% of total 2007 emissions. On-road vehicle emissions represented 40% of total community emissions in 2007, and the combination of on-road vehicle and building energy emissions accounted for 84% of total community emissions. The third largest source is off-road

vehicles, with a contribution of 8% of the total 2007 emissions. The remaining sources and their contributions towards total emissions are refrigerants (6%), solid waste generation (1%), water consumption (0.43%), wastewater treatment (0.30%), and agriculture (0.02%).

Table 15
2007 Community Greenhouse Gas Inventory

Emissions Sector	MT CO_2E	Percent of Total 2007 Inventory
Building Energy	142,855	44%
On-road Transportation and Land Use	131,720	40%
Off-road Transportation and Equipment	24,789	8%
Refrigerants	20,204	6%
Solid Waste Generation	3,514	1%
Water Consumption	1,413	0.43%
Wastewater Treatment	972	0.30%
Agriculture	64	0.02%
Total Emissions	**325,532**	**100%**
Stationary Sources[1]	96,722	—

Source: City of Goleta 2014a.
Note:
[1] Emissions from stationary sources (e.g., generators) were not included in the CAP analysis, as these are regulated by CARB and SBCAPCD. Emissions from stationary sources are presented as an informational item.

3.1.3 Potential Effects of Human Activity on Climate Change

Globally, climate change has the potential to impact numerous environmental resources though uncertain impacts related to future air temperatures and precipitation patterns. 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 rise in average global tropospheric temperature of 0.2°C 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, including substantial ice loss in the Arctic (IPCC 2007).

Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. Climate change is already affecting California: average temperatures 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 2010a). Climate change modeling using emission rates from the year 2000 shows that further warming would occur, which would induce further changes in the global climate system during the current century. Changes to the global climate system and ecosystems and to California would include, but would not be limited to, the following:

- The loss of sea ice and mountain snowpack resulting in higher sea levels and higher sea surface evaporation rates with a corresponding increase in tropospheric water vapor due to the atmosphere's ability to hold more water vapor at higher temperatures (IPCC 2007)
- A rise in global average sea level primarily due to thermal expansion and melting of glaciers and ice caps and the Greenland and Antarctic ice sheets (IPCC 2007)
- Changes in weather that include widespread changes in precipitation, ocean salinity, and wind patterns; and more energetic aspects of extreme weather, including droughts, heavy precipitation, heat waves, extreme cold, and intensity of tropical cyclones (IPCC 2007)
- A decline of Sierra snowpack, which accounts for approximately half of the surface water storage in California, by 30% to as much as 90% over the next 100 years (CAT 2006)
- An increase in the number of days conducive to O_3 formation by 25% to 85% (depending on the future temperature scenario) in high-O_3 areas of Los Angeles and the San Joaquin Valley by the end of the twenty-first century (CAT 2006)
- A high potential for erosion of California's coastlines and seawater intrusion into the Delta and levee systems due to the rise in sea level (CAT 2006)

3.2 REGULATORY SETTING

This section provides a brief foundation for these regulatory efforts and discusses the key federal and state regulatory efforts that could apply to development under the Heritage Ridge project and the users of such development.

3.2.1 Federal

Massachusetts v. EPA. On April 2, 2007, in *Massachusetts v. EPA*, the U.S. Supreme Court directed the Environmental Protection Agency (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 making these decisions, the EPA administrator is required to follow the language of Section 202(a) of the Clean Air Act. On December 7, 2009, the administrator signed a final rule with two distinct findings regarding GHGs under Section 202(a) of the 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 referred to as 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 referred to as 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. On December 19, 2007, President George W. Bush signed the Energy Independence and Security Act of 2007. Among other key measures, the act would do the following, which would aid in the reduction of national GHG emissions:

1. Increase the supply of alternative fuel sources by setting a mandatory Renewable Fuel Standard (RFS) requiring fuel producers to use at least 36 billion gallons of biofuel in 2022.
2. Set a target of 35 miles per gallon (mpg) for the combined fleet of cars and light trucks by model year 2020 and direct the 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.
3. 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.

EPA and NHTSA Joint Final Rule for Vehicle Standards. On April 1, 2010, the EPA and NHTSA announced a joint final rule to establish a national program consisting of new standards for light-duty vehicles model years 2012 through 2016. The joint rule is intended to reduce GHG emissions and improve fuel economy. The EPA approved the first-ever national GHG emissions standards under the Clean Air Act, and NHTSA approved Corporate Average Fuel Economy (CAFE) standards under the Energy Policy and Conservation Act (75 FR 25324–25728). The final rule became effective on July 6, 2010 (75 FR 25324–25728).

The EPA's GHG standards require new passenger cars, light-duty trucks, and medium-duty passenger vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile in model year 2016, equivalent to 35.5 mpg if the automotive industry were to meet this CO_2 level through fuel economy improvements alone. The CAFE standards for passenger cars and

light trucks will be phased in between 2012 and 2016, with the final standards equivalent to 37.8 mpg for passenger cars and 28.8 mpg for light trucks, resulting in an estimated combined average of 34.1 mpg. The rules will simultaneously reduce GHG emissions, improve energy security, increase fuel savings, and provide clarity and predictability for manufacturers.

In August 2012, the EPA and NHTSA approved a second round of GHG and CAFE standards for model years 2017 and beyond (77 FR 62624–63200). These standards will reduce motor vehicle GHG emissions to 163 grams of CO_2 per mile, which is equivalent to 54.5 mpg if this level were achieved solely through improvements in fuel efficiency, for cars and light-duty trucks by model year 2025. A portion of these improvements, however, will likely be made through reductions in air conditioning leakage and through use of alternative refrigerants, which would not contribute to fuel economy. The regulations also include targeted incentives to encourage early adoption and introduction into the marketplace of advanced technologies to dramatically improve vehicle performance, including the following:

- Incentives for electric vehicles, plug-in hybrid electric vehicles, and fuel-cell vehicles
- Incentives for hybrid technologies for large pickup trucks and for other technologies that achieve high fuel economy levels on large pickup trucks
- Incentives for natural gas vehicles
- Credits for technologies with potential to achieve real-world GHG reductions and fuel economy improvements that are not captured by the standard test procedures

3.2.2 State

Title 24. Although not originally intended to reduce GHG emissions, California's Energy Efficiency Standards for Residential and Nonresidential Buildings (24 CCR Part 6) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy-efficiency technologies and methods. The premise for the standards is that energy-efficient buildings require less electricity, natural gas, and other fuels. Electricity production from fossil fuels and on-site fuel combustion (typically for space and water heating) results in GHG emissions. Therefore, increased energy efficiency in buildings results in relatively lower rates of GHG emissions on a building-by-building basis.

Part 6 is updated periodically to incorporate and consider new energy efficiency technologies and methodologies. The most recent amendments, referred to as the 2013 standards, will be effective on July 1, 2014. The 2013 standards will use 25% less energy for lighting, heating, cooling, ventilation, and water heating than the 2008 standards (CEC 2012).

Assembly Bill 1493. In response to the transportation sector accounting for more than half of California's CO_2 emissions, AB 1493 (Pavley) was enacted on July 22, 2002. 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 whose primary use is 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%.

Executive Order S-3-05. In June 2005, Governor Schwarzenegger established California's GHG emissions reduction targets in Executive Order S-3-05. The executive order established the following goals: GHG emissions should be reduced to 2000 levels by 2010, GHG emissions should be reduced to 1990 levels by 2020, and GHG emissions should be reduced to 80% below 1990 levels by 2050. The California Environmental Protection Agency secretary is required to coordinate efforts of various agencies to collectively and efficiently reduce GHGs. The Climate Action Team (CAT) is responsible for implementing global warming emissions reduction programs. Representatives from several state agencies compose the CAT. Under the executive order, the California Environmental Protection Agency secretary is directed 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 CAT fulfilled its initial report requirements through the 2006 *Climate Action Team Report to Governor Schwarzenegger and the Legislature* (CAT 2006).

The 2009 *Climate Action Team Biennial Report* (CAT 2010a), published in April 2010, expands on the policy outlined in the 2006 assessment. The 2009 report provides new information and scientific findings regarding the development of new climate and sea level projections using new information and tools that have recently become available and evaluates climate change within the context of broader social changes, such as land use changes and demographics. The 2009 report also identifies the need for additional research in several different aspects that affect climate change in order to support effective climate change strategies. The aspects of climate change determined to require future research include vehicle and fuel technologies, land use and smart growth, electricity and natural gas, energy efficiency, renewable energy and reduced carbon energy sources, low GHG technologies for other sectors, carbon sequestration, terrestrial sequestration, geologic sequestration, economic impacts and considerations, social science, and environmental justice.

Subsequently, the 2010 *Climate Action Team Report to Governor Schwarzenegger and the California Legislature* (CAT 2010b) reviews past Climate Action Milestones including voluntary

reporting programs, GHG standards for passenger vehicles, the Low Carbon Fuel Standard (LCFS), a statewide renewable energy standard, and the cap-and-trade program. Additionally, the 2010 report includes a cataloguing of recent research and ongoing projects; mitigation and adaptation strategies identified by sector (e.g., agriculture, biodiversity, electricity, and natural gas); actions that can be taken at the regional, national, and international levels to mitigate the adverse effects of climate change; and today's outlook on future conditions.

Assembly Bill 32. In furtherance of the goals established in Executive Order S-3-05, the legislature enacted AB 32 (Núñez and Pavley), the California Global Warming Solutions Act of 2006, which Governor Schwarzenegger signed on September 27, 2006. The GHG emissions limit is equivalent to the 1990 levels, which are to be achieved by 2020.

CARB has been assigned to carry out and develop the programs and requirements necessary to achieve the goals of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions. This program will be used to monitor and enforce compliance with the established standards. CARB is also required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 allows CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

As required under AB 32, on December 6, 2007, CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions limit for 2020. The 2020 emissions limit was set at 427 MMT CO_2E. In addition to the 1990 emissions inventory, CARB also adopted regulations requiring mandatory reporting of GHGs for the large facilities that account for 94% of GHG emissions from industrial and commercial stationary sources in California. About 800 separate sources fall under the new reporting rules and include electricity generating facilities, electricity retail providers and power marketers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and other industrial sources that emit CO_2 in excess of specified thresholds.

On December 11, 2008, CARB approved the *Climate Change Proposed Scoping Plan: A Framework for Change* (Scoping Plan; CARB 2008) to achieve the goals of AB 32. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and CAT early actions and additional GHG reduction measures by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program.

The key elements of the Scoping Plan include the following:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards.
- Achieving a statewide renewables energy mix of 33%.
- 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.
- Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets.
- Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the LCFS.
- 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.

CARB is required to update its Scoping Plan at least once every 5 years (Health and Safety Code, Section 38561(h). The First Update to the Climate Change Scoping Plan (Scoping Plan Update; CARB 2014e) was approved by the CARB Board on May 22, 2014. The Scoping Plan Update builds upon the initial Scoping Plan with new strategies and recommendations. The update identifies opportunities to leverage existing and new funds to further drive GHG emission reductions through strategic planning and targeted low carbon investments. The update adjusts California's target GHG emissions for 2020 at 431 MMT CO_2E based on use of GWP factors in the IPCC's Fourth Assessment Report, which was published in 2007. The update defines CARB's climate change priorities for the next 5 years and sets the groundwork to reach California's long-term climate goals set forth in Executive Orders S-3-05 and B-16-2012. The update highlights California's progress toward meeting the near-term 2020 GHG emission reduction goals defined in the initial Scoping Plan and finds that California is on track to meet the near-term 2020. These efforts were pursued to achieve the near-term 2020 goal and have created a framework for ongoing climate action that can be built upon to maintain and continue economic sector-specific reductions beyond 2020, as required by AB 32. The document recommends efforts to reduce so-called short-lived climate pollutants (black carbon, methane, and hydrofluorocarbons). These pollutants remain in the atmosphere for shorter periods of time and have much larger GWPs compared to CO_2. The Scoping Plan Update identifies nine key focus areas or sectors (energy, transportation, agriculture, water, waste management, and natural and working lands), along with short-lived climate pollutants, green buildings, and the cap-and-

trade program. The update also recommends that a statewide mid-term target and mid-term and long-term sector targets be established toward meeting the 2050 goal established by Executive Order S-3-05 to reduce California's GHG emissions to 80% below 1990 levels, although no specific recommendations are made.

Executive Order S-1-07. Issued on January 18, 2007, Executive Order S-1-07 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. 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. CARB adopted the implementing regulation in April 2009. The regulation is expected to increase the production of biofuels, including those from alternative sources, such as algae, wood, and agricultural waste. In addition, the LCFS would drive the availability of plug-in hybrid, battery electric, and fuel-cell power motor vehicles. The LCFS is anticipated to lead to the replacement of 20% of the fuel used in motor vehicles with alternative fuels by 2020.

Senate Bill 375. In August 2008, the legislature passed, and on September 30, 2008, Governor Schwarzenegger signed Senate Bill (SB) 375 (Steinberg), which addresses GHG emissions associated with the transportation sector through regional transportation and sustainability plans. Regional GHG reduction targets for the automobile and light-truck sector for 2020 and 2035, as determined by CARB, are required to consider the emission reductions associated with vehicle emission standards (see SB 1493), the composition of fuels (see Executive Order S-1-07), and other CARB-approved measures to reduce GHG emissions. Regional metropolitan planning organizations will be responsible for preparing a SCS within their RTP. The goal of the SCS is to establish a development plan for the region, which, after considering transportation measures and policies, will achieve, if feasible, the GHG reduction targets. If an SCS is unable to achieve the GHG reduction target, a metropolitan planning organization 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. SB 375 provides incentives for streamlining CEQA requirements by substantially reducing the requirements for "transit priority projects," as specified in SB 375, and eliminating the analysis of the impacts of certain residential projects on global warming and the growth-inducing impacts of those projects when the projects are consistent with the SCS or alternative planning strategy. On September 23, 2010, CARB adopted the SB 375 targets for the regional metropolitan planning organizations. CARB set a target of zero net growth in per capita emissions for SBCAG (SBCAG 2013).

Senate Bill X1 2. On April 12, 2011, Governor Jerry Brown signed SB X1 2 in the First Extraordinary Session, which would expand the Renewable Portfolio Standard (RPS) by establishing a goal 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 of 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. In addition to the retail sellers covered by SB 107, SB X1 2 adds local publicly owned electric utilities to the RPS. By January 1, 2012, the CPUC is required to establish the quantity of electricity products from eligible renewable energy resources to be procured by retail sellers in order to achieve targets of 20% by December 31, 2013; 25% by December 31, 2016; and 33% by December 31, 2020. The statute also requires that the governing boards for local publicly owned electric utilities establish the same targets and that the governing boards be responsible for ensuring compliance with these targets. The CPUC will be responsible for enforcement of the RPS for retail sellers, while the CEC and CARB will enforce the requirements for local publicly owned electric utilities.

3.2.3 Local

SBCAG Regional Transportation Plan - Sustainable Communities Strategy

SBCAG prepared a 2040 RTP-SCS, adopted in August 2013, which shows how the region will achieve the required GHG per capita emission targets established by CARB under SB 375 as well the co-benefits of reducing criteria pollutants. The 2040 RTP-SCS is based on a preferred land use and transportation scenario, which lays out one possible pattern of future growth and transportation investment for the region. The 2040 RTP-SCS preferred scenario emphasizes a transit-oriented development and infill approach to land use and housing, supported by complementary transportation and transit investments. The 2040 RTP-SCS meets the requirements of SB 375 and successfully achieves the region's GHG emission targets in 2020 and 2035, while accommodating forecast growth and regional housing needs. The 2040 RTP-SCS would meet the SBCAG region's GHG emission targets from passenger vehicles for 2020 and 2035, achieving reductions in per capita emissions of CO_2 from passenger vehicles of 10.5% in 2020 and 15.4% in 2035, better than the CARB-established SBCAG target of zero net growth in per capita emissions (SBCAG 2013).

City of Goleta Climate Action Plan

The City's General Plan Conservation Element Implementation Action 5 (CE-IA-5) called for the development of a GHG Reduction Plan, referred to as the Climate Action Plan. The three primary purposes of the Climate Action Plan are to provide a roadmap for the City to achieve GHG reductions, comply with California laws and regulations, and serve as required mitigation for the City's General Plan. These goals are accomplished through the identification of potential strategies to reduce GHG emissions within the City that are consistent with statewide GHG reductions goals described in AB 32 and Executive Order S-3-05. On June 16, 2014, the City's Planning Commission voted 3–1 to recommend adoption of the Climate Action Plan to the City Council. On July 15, 2104, the City Council voted unanimously 5–0 to adopt the Climate Action Plan.

The City's 2014 Climate Action Plan identifies both quantified and nonquantified measures to effectively meet GHG reduction targets. Attainment of the reduction targets requires a commitment to local actions as well as continued implementation of federal and state mandates. These actions and associated co-benefits will contribute to the City's current and future prosperity and sustainability by (1) conserving resources such as energy and water, (2) fostering the creation of green jobs, and (3) furthering Goleta's leadership in clean research and development industries (City of Goleta 2014a). While CE-IA-5 does not specify a reduction target, the City has decided to use a target of 11% below 2007 emissions for emissions in 2020 and 26% below 2020 levels for 2030. Measures contained in this Climate Action Plan are intended to increase the energy and water efficiency of buildings and expand alternative transportation choices.

According to the City of Goleta senior planning staff, the Climate Action Plan does not serve as a Qualified Greenhouse Gas Emissions Reduction Plan as there is no "substantial evidence" as required under CEQA Section 15183.5(D) that the suggested voluntary measures will quantifiably reduce GHG emissions in order to meet the projected 2020 target (Slaven, pers. comm. 2014). Therefore, no CEQA document can tier from the Climate Action Plan. Furthermore, the City's Climate Action Plan, as currently written, is a high-level analysis of GHG emissions within the entire community and does not provide specific reduction measures at a project-level scale (Slaven, pers. comm. 2014).

City of Goleta Green Building Program

Green building is a comprehensive approach to the design, construction, and operation of buildings, which seeks to minimize the use of energy, water, and other natural resources and create a healthy, productive indoor environment. The Green Building Program was developed

between 2010–2012 through a community stakeholder process that included a citizen advisory group known as the Green Ribbon Committee, which included representatives from the design, construction, and development communities. The City's first Green Building Program took effect January 1, 2013, with the goal of increasing awareness of and access to green building resources, and encouraging the incorporation of green building measures into the design, construction, and maintenance of buildings (City of Goleta 2014b). Voluntary for most types of projects, the goal of the program is to increase awareness of and access to green building resources and encourage the incorporation of green building measures into the design, construction, and maintenance of buildings. Only those applications requesting a legislative action from the City Council must meet a few mandatory requirements, known as CALGreen+. Examples of legislative actions include a rezone, general plan amendment, specific plan, and/or ordinance amendment.

3.3 THRESHOLDS OF SIGNIFICANCE

3.3.1 Governor's Office of Planning and Research Guidance

The Governor's Office of Planning and Research's (OPR) Technical Advisory titled *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) 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" (OPR 2008).

3.3.2 Cumulative Nature of Climate Change

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 in the South Central Coast Air Basin, such as the 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.

While the project would result in emissions of GHGs during construction and operation, no guidance exists to indicate what level of GHG emissions would be considered substantial enough to result in a significant adverse impact on global climate. However, it is generally believed that an individual project is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory as scientific uncertainty regarding the significance a project's individual and cumulative effects on global climate change remains.

Thus, GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective (CAPCOA 2008). This approach is consistent with that recommended by the California Natural Resources Agency (CNRA), which noted in its Public Notice for the proposed CEQA amendments that the evidence before it indicates that in most cases, the impact of GHG emissions should be considered in the context of a cumulative impact, rather than a project-level impact (CNRA 2009a). Similarly, the *Final Statement of Reasons for Regulatory Action on the CEQA Amendments* confirm that an EIR or other environmental document must analyze the incremental contribution of a project to GHG levels and determine whether those emissions are cumulatively considerable (CNRA 2009b). Accordingly, further discussion of the project's GHG emissions and their impact on global climate are addressed below.

3.3.3 CEQA Guidelines

With respect to GHG emissions, the CEQA Guidelines state in Section 15064.4(a) 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. 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 15000 et seq.). Section 15064.4(b) provides that the lead agency should consider the following when assessing the significance of impacts from GHG emissions on the environment:

1. The extent 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.
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)).

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen 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" (14 CCR 15064.7(c)). Similarly, the revisions to Appendix G, Environmental Checklist Form, which is often used as a basis for lead agencies' selection of significance thresholds, do not prescribe specific thresholds. Rather, the CEQA Guidelines establish two new CEQA thresholds related to GHGs, and these will therefore be used to discuss significance of project impacts:

- Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Accordingly, 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 (14 CCR 15000 et seq.).

3.3.4 Local Guidance

At this time, neither the SBCAPCD nor the City of Goleta has adopted numerical thresholds of significance for GHG emissions. The SBCAPCD, however, recommends that all projects subject to CEQA review be considered in the context of GHG emissions and climate change impacts, and that CEQA documents should include a quantification of GHG emissions from all project sources, direct and indirect, as applicable (SBCAPCD 2014a). In addition, the SBCAPCD recommends that climate change impacts be mitigated to the extent reasonably possible, whether or not they are determined to be significant.

Pursuant to direction provided by City staff in the Planning and Environmental Review Department, the City is currently referring to the Bay Area Air Quality Management District's (BAAQMD) thresholds for GHG emissions as guidance for City of Goleta project-level projects. In accordance with CEQA Guidelines Sections 15064.4(b)(2) and 15064.7(c), Goleta has consistently relied upon Santa Barbara County's *Support for Use of BAAQMD GHG Emissions Standards* (County of Santa Barbara 2010) as the recommended basis and threshold for establishing the GHG impacts of a project. The BAAQMD/County of Santa Barbara Interim Thresholds of Significance for operational GHG emissions for projects other than stationary

sources, is as follows, where any of these criteria can be used to evaluate a project's GHG emissions (BAAQMD 2010):

- 1,100 MT CO_2E per year; OR
- 4.6 MT CO_2E per service population (SP) per year (SP = residents + employees); OR
- Compliance with Qualified Climate Action Plan.

The per-service population guideline is intended to avoid penalizing large projects that incorporate GHG-reduction measures such that they may have high total annual GHG emissions, but would be relatively efficient, as compared to projects of similar scale. Consistent with the BAAQMD's *CEQA Air Quality Guidelines*, the construction emissions associated with the proposed project (e.g., those from off-road equipment, worker vehicles) will be estimated and reported; however, the GHG threshold applies only to the operational emissions (BAAQMD 2010). Although, the BAAQMD guidance does not indicate that the short-term GHG emissions from the construction phase should be included in the emissions compared to the established threshold, it is common practice for GHG analyses performed for proposed projects in the City of Goleta to amortize construction emissions over the life of the project, which is typically 30 years for residential projects, and add those emissions to the estimated annual operational emissions.

As described under 3.2.3 Regulatory Setting (Local), the Climate Action Plan is not applicable for specific project analysis. Accordingly, the City is recommending continuing with the existing approach of utilizing the BAAQMD's thresholds for GHG emissions analysis until such time that the City has updated the City's CEQA Guidelines and provided appropriate quantifiable thresholds.

To determine potential project-generated GHG impacts, this analysis utilizes the BAAQMD efficiency metric threshold of 4.6 MT CO_2E per SP per year.

3.4 ANALYSIS METHODOLOGY

The SBCAPCD recommends using CalEEMod for project-level review because it has the ability to quantify indirect GHG emissions and GHG mitigation (SBCAPCD 2014a). Consistent with SBCAPCD guidance, CalEEMod was utilized to estimate construction emissions and operational area, mobile, and indirect (e.g., electrical generation) source emissions.

Modeled, estimated project-generated GHG emissions will be used to determine if the project would exceed the BAAQMD GHG threshold of 4.6 MT CO_2E per SP per year. The SP for the workforce housing was determined based on CalEEMod defaults, which assumes 2.72 persons

per single-family or multi-family dwelling unit. The SP for the senior housing was determined based on a study performed by the Towbes Group, Inc. (2014), which assumes 1.11 persons per senior dwelling unit. This occupant-to-unit ratio analysis was based on occupant estimates for similar senior housing developments currently in operation in the cities of Santa Barbara, Carpinteria, and Ventura, and is provided as Appendix C. It is assumed that the proposed rental residential units would not generate a substantial number of jobs.

3.5 IMPACT ANALYSIS

3.5.1 Generation of GHG Emissions

Construction Emissions

Construction of the proposed project would result in GHG emissions, which are primarily associated with use of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. GHG emissions associated with temporary construction activity were quantified using the CalEEMod. A detailed depiction of the construction schedule—including information regarding phasing, equipment utilized during each phase, haul trucks, vendor trucks, and worker vehicles—is included in Section 1.3.1, Project Description, Construction, of this report. On-site sources of GHG emissions include off-road equipment, and off-site sources include hauling and vendor trucks and worker vehicles. Emissions from on-site and off-site sources are combined for the purposes of this analysis; a breakdown of emissions by source is provided in Appendix B.

Table 16, Estimated Annual Construction Greenhouse Gas Emissions, presents construction emissions for the proposed project in 2015, 2016, and 2017 from on-site and off-site emission sources, and GHG emissions resulting from pre-construction export of existing stockpiled soil in 2014.

Table 16
Estimated Annual Construction Greenhouse Gas Emissions

Year	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
Proposed Project Construction Emissions				
2015	326	0.06	0.00	328
2016	461	0.06	0.00	463
2017	231	0.03	0.00	232
Subtotal	***1,018***	***0.15***	***0.00***	***1,023***
Pre-construction Export Emissions				
2014	363	0.01	0.00	363
Combined Total	**1,381**	**0.16**	**0.00**	**1,386**

Notes: See Appendix B for detailed results.
MT CO_2 – metric tons carbon dioxide; MT CH_4 – metric tons methane; MT N_2O – metric tons nitrous oxide; MT CO_2E – metric tons carbon dioxide equivalent

As shown in Table 16, the estimated GHG emissions generated during project construction would be approximately 328 MT CO_2E in 2015, 463 MT CO_2E in 2016, and 232 MT CO_2E in 2017, for a total of 1,023 MT CO_2E. With the addition of 363 MT CO_2E resulting from pre-construction export emissions in 2014, the combined total is estimated to be 1,386 MTCO_2E.

Estimated project-generated construction emissions annualized over 30 years would be approximately 46 MT CO_2E per year. Because there is no separate GHG threshold for construction, the evaluation of significance is discussed in the operational emissions analysis below.

Operational Emissions

Operation of the proposed project would result in GHG emissions from (1) energy use (natural gas and generation of electricity consumed by the project), (2) vehicular traffic generated primarily by residents, (3) solid waste generation, and (4) generation of electricity associated with water supply and wastewater treatment.

GHG emissions associated with project-generated daily traffic were estimated using CalEEMod and were based on the trip generation rates provided by Associated Transportation Engineers; see Section 1.3.2, Project Description Operation, for details. CalEEMod default values for mobile sources was utilized consistent with the assumptions used in the air quality impact analysis (Section 2.7.2, Operational Impacts).

CalEEMod was also used to estimate emissions from the project's area and indirect (i.e., not generated on, but associated with, the project site) sources, which include energy use (natural gas and generation of electricity consumed by the project); generation of electricity associated with water supply, treatment, and distribution and wastewater treatment; and solid waste disposal. Operation of gasoline-powered landscape maintenance equipment also produces GHG emissions, although minimal. The estimation of proposed non-mobile operational emissions was based on CalEEMod land use defaults and total area (i.e., square footage) of the proposed senior housing and workforce housing residences (low-rise apartment) and neighborhood park (city park).

Annual electricity emissions were estimated using the emissions factors for Southern California Edison, which would provide electricity for the project. Default electricity and natural gas usage factors in CalEEMod were used for proposed building operation. Default factors for water supply, wastewater treatment, and solid waste were also used to estimate GHG emissions.

Project sustainable design features listed in Section 1.4, Project Sustainable Design Features, would reduce GHG emissions associated with energy use, vehicle traffic, and water use; however, many of these reductions cannot be quantified. Energy-related project design features with quantifiable reductions that are assumed in the estimated project emissions include improvement in energy efficiency (exceed CalEEMod default 2008 Title 24 standards by 25% to reflect the updated 2013 standards (CEC 2012)). Minor reductions to motor vehicle emissions associated with the project improvement of the pedestrian network and provision of traffic calming measures were also considered. 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. Safety and traffic calming measures would also encourage people to walk or bike instead of using a vehicle and may include features such as marked crosswalks with countdown signal timers, raised crosswalks or intersections, median islands, and planter strips with street trees (CAPCOA 2010). The project would also incorporate various outdoor water conservation strategies such as use of water-wise and California native landscaping and efficient irrigation systems; based on available project-specifics regarding water reductions, it was assumed in CalEEMod that the project would utilize water efficient irrigation systems. The unmitigated emissions analysis assumes that project design features that would reduce GHG emissions are not incorporated. The mitigated emissions analysis assumes that proposed project features with quantifiable GHG emissions reductions are incorporated.

The estimated operational project-generated GHG emissions from area sources (landscape maintenance), energy usage, motor vehicles, solid waste generation, water supply, and wastewater treatment, not considering the project design features or other GHG mitigation measures, in 2018 (i.e., first full year of project operation) are shown in Table 17, Estimated Annual Unmitigated Operational Greenhouse Gas Emissions (2018).

Table 17
Estimated Annual Unmitigated Operational Greenhouse Gas Emissions (2018)

	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
Area Sources and Energy	639	0.03	0.01	642
Mobile Sources	2,052	0.09	0.00	2,054
Solid Waste	34	1.99	0.00	75
Water Supply and Wastewater	62	0.03	0.02	68
Total	**2,787**	**2.14**	**0.03**	**2,839**
Amortized Construction Emissions				46
Operation + Amortized Construction Total				**2,885**

Notes: See Appendix B for detailed results.
Unmitigated emissions represent project operations without incorporation of project features.

MT CO_2 – metric tons carbon dioxide; MT CH_4 – metric tons methane; MT N_2O – metric tons nitrous oxide; MT CO_2E – metric tons carbon dioxide equivalent

As shown in Table 17, estimated annual unmitigated project-generated GHG emissions in 2018 would be approximately 2,839 MT CO_2E per year as a result of project operations. Vehicles traveling to and from the project land uses would be the primary source of project-generated GHG emissions. Estimated annual unmitigated project-generated emissions in 2018 from area and energy sources, mobile sources, and amortized project construction emissions would be approximately 2,885 MT CO_2E per year.

The estimated operational GHG emissions, considering the project design features, associated with the operation of the proposed project in 2018 are shown in Table 18, Estimated Annual Mitigated Operational Greenhouse Gas Emissions (2018).

Table 18
Estimated Annual Mitigated Operational Greenhouse Gas Emissions (2018)

	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
Area Sources and Energy	594	0.03	0.01	597
Mobile Sources	1,754	0.08	0.00	1,756
Solid Waste	34	1.99	0.00	75
Water Supply and Wastewater	61	0.03	0.02	67
Total	**2,443**	**2.14**	**0.03**	**2,495**
Amortized Construction Emissions				46
Operation + Amortized Construction Total				**2,541**

Notes: See Appendix B for detailed results.
Mitigated emissions represent project operations with incorporation of project features.
MT CO_2 – metric tons carbon dioxide; MT CH_4 – metric tons methane; MT N_2O – metric tons nitrous oxide; MT CO_2E – metric tons carbon dioxide equivalent

As shown in Table 18, estimated annual mitigated project-generated GHG emissions in 2018 would be approximately 2,495 MT CO_2E per year as a result of project operations. Estimated annual mitigated project-generated emissions in 2018 from area and energy sources, mobile sources, and amortized project construction emissions would be approximately 2,541 MT CO_2E per year.

As stated previously, the service population represents total residents and employees. It was assumed that the service population for the workforce housing would be 620 persons based on the assumption of 2.72 persons per dwelling unit. The service population for the senior housing was assumed to be 145 persons, based on the assumption of 1.11 persons per senior dwelling unit. The proposed residential development would not generate substantial new employment, and potential employees associated with the rental office were not included in this analysis to provide

a conservative population estimate. The total service population for the proposed project is estimated to be 765 persons.

Estimated unmitigated (without project features) project emissions (2,885 MT CO_2E per year), when divided by the SP (765 persons), would be 3.77 MT CO_2E per SP per year. Estimated mitigated (with project features) project emissions, assuming incorporation of proposed sustainable design measures with quantifiable reductions (2,541 MT CO_2E per year), when divided by the SP (765 persons), would be 3.32 MT CO_2E per SP per year. Both estimated annual unmitigated and mitigated project-generated emissions in 2018 from area and energy sources, mobile sources, and amortized project construction emissions would be below the BAAQMD efficiency metric threshold of 4.6 MT CO_2E per SP per year.

3.5.2 Conflict with an Applicable Plan

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

As discussed in Section 3.2.2, Regulatory Setting – State, the Scoping Plan approved by CARB on December 12, 2008, provides a framework for actions to reduce California's GHG emissions and requires CARB and other state agencies to adopt regulations and other initiatives to reduce GHGs. As such, the Scoping Plan is not directly applicable to specific projects. Moreover, the Final Statement of Reasons for the amendments to the CEQA Guidelines reiterates the statement in the Initial Statement of Reasons that "[t]he Scoping Plan may not be appropriate for use in determining the significance of individual projects because it is conceptual at this stage and relies on the future development of regulations to implement the strategies identified in the Scoping Plan" (CNRA 2009b). Under the Scoping Plan, however, there are several state regulatory measures aimed at the identification and reduction of GHG emissions. CARB and other state agencies have adopted many of the measures identified in the Scoping Plan. Most of these measures focus on area source emissions (e.g., energy usage, high-GWP GHGs in consumer products) and changes to the vehicle fleet (hybrid, electric, and more fuel-efficient vehicles) and associated fuels (e.g., LCFS), among others. While state regulatory measures will ultimately reduce GHG emissions associated with the project through their effect on these sources, no statewide plan, policy, or regulation would be specifically applicable to reductions in GHG emissions from the project.

The SBCAPCD's *Scope and Content of Air Quality Sections in Environmental Documents* provides potential GHG and climate change mitigation measure options that lead agencies could consider when developing mitigation measures. However, the SBCAPCD has not adopted GHG reduction measures that would apply to the GHG emissions associated with the proposed project.

As discussed in Section 3.2.3, Regulatory Setting – Local, the City's Climate Action Plan does not serve as a Qualified Greenhouse Gas Emissions Reduction Plan as there is no "substantial evidence" as required under CEQA Section 15183.5(D) that the suggested voluntary measures will quantifiably reduce GHG emissions in order to meet the projected 2020 target (Slaven, pers. comm. 2014). At this time, no mandatory GHG regulations or finalized agency guidelines would apply to implementation of this project, and no conflict would occur. Therefore, this cumulative impact would be less than significant.

4.0 REFERENCES CITED

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APPENDIX A

CalEEMod Output

Daily Winter and Summer Emissions

Heritage Ridge

Santa Barbara-South of Santa Ynez Range County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	4.75	Acre	4.75	206,910.00	0
City Park	2.00	Acre	2.00	87,120.00	0
Apartments Low Rise	228.00	Dwelling Unit	6.17	218,000.00	620
Apartments Mid Rise	132.00	Dwelling Unit	3.27	120,000.00	145

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2018
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Apartments Low Rise represents workforce housing. Apartments Mid Rise represents senior housing.

Construction Phase - See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Trips and VMT - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Architectural Coating - Residential Interior: 684,450 SF. Residential Exterior: 228,150 SF. Non-Residential Interior: 0 SF. Non-Residential Exterior: Parking Lot 12,415 SF, City Park 5,227 SF (6% of total SF per CalEEMod Appendix E, Revised July 2013).

Construction Off-road Equipment Mitigation - None.

Vehicle Trips - Based on trip rates provided in the North Willow Springs Project Traffic, Circulation, and Parking Study (ATE 2014).

Area Coating - See note under Construction - Architectural Coatings.

Energy Use - CalEEMod default energy factors for Apartments Low Rise used for both Apartments Low Rise (workforce housing) and Apartments Mid Rise (senior housing).

Water And Wastewater - Default values.

Solid Waste - Default values.

Mobile Land Use Mitigation - Increase Density: 22.2 dwelling units/acre. Increase Transit Accessibility, Distance to Transit Station: 0.75 miles. Improve Pedestrian Network: Project Site and Connecting Off-Site. Provide Traffic Calming Measures: 100% Streets with Improvement, 100% Intersections with Improvement. Limit Parking Supply, % Reduction in Spaces: 7.2%.

Area Mitigation - Use Low VOC Paint for residential interior (50 g/L) and exterior (100 g/L).

Energy Mitigation - Exceed Title 24, % Improvement: 25%.

Water Mitigation - Use Water-Efficient Irrigation Systems, % Reduction: 6.1% (default value).

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					
2015	5.8075	63.4558	27.4619	0.0428	2.0266	3.2003	3.9285	0.2943	2.9442	3.0478	0.0000	4,462.7681	4,462.7681	1.2768	0.0000	4,489.5805
2016	31.3465	25.1309	29.5903	0.0414	1.2846	1.6629	2.9476	0.3461	1.5826	1.9287	0.0000	3,922.3034	3,922.3034	0.5038	0.0000	3,932.8822
2017	35.4002	42.6233	42.8893	0.0637	1.4427	2.6525	4.0951	0.3881	2.4869	2.8750	0.0000	6,101.2413	6,101.2413	1.1310	0.0000	6,124.9911
Total	**72.5543**	**131.2099**	**99.9415**	**0.1479**	**4.7539**	**7.5156**	**10.9712**	**1.0285**	**7.0137**	**7.8516**	**0.0000**	**14,486.3128**	**14,486.3128**	**2.9115**	**0.0000**	**14,547.4538**

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					
2015	5.8075	63.4558	27.4619	0.0428	1.0913	3.2003	3.5794	0.2943	2.9442	3.0101	0.0000	4,462.7681	4,462.7681	1.2768	0.0000	4,489.5805
2016	31.3465	25.1309	29.5903	0.0414	1.2846	1.6629	2.9476	0.3461	1.5826	1.9287	0.0000	3,922.3034	3,922.3034	0.5038	0.0000	3,932.8822
2017	35.4002	42.6233	42.8893	0.0637	1.4427	2.6525	4.0951	0.3881	2.4869	2.8750	0.0000	6,101.2412	6,101.2412	1.1310	0.0000	6,124.9911
Total	**72.5543**	**131.2099**	**99.9415**	**0.1479**	**3.8186**	**7.5156**	**10.6221**	**1.0285**	**7.0137**	**7.8139**	**0.0000**	**14,486.3127**	**14,486.3127**	**2.9115**	**0.0000**	**14,547.4538**

	ROG	NOx	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**	**19.67**	**0.00**	**3.18**	**0.00**	**0.00**	**0.48**	**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	17.4929	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633	0.0000	53.4803	53.4803	0.0530	0.0000	54.5934
Energy	0.1172	1.0013	0.4261	6.3900e-003		0.0810	0.0810		0.0810	0.0810		1,278.2884	1,278.2884	0.0245	0.0234	1,286.0678
Mobile	6.7369	16.5226	73.1085	0.1543	11.5327	0.2040	11.7367	3.0829	0.1879	3.2708		12,651.6492	12,651.6492	0.5521		12,663.2422
Total	**24.3469**	**17.8711**	**103.4458**	**0.1622**	**11.5327**	**0.4482**	**11.9809**	**3.0829**	**0.4321**	**3.5150**	**0.0000**	**13,983.4179**	**13,983.4179**	**0.6296**	**0.0234**	**14,003.9033**

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	15.3200	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633	0.0000	53.4803	53.4803	0.0530	0.0000	54.5934
Energy	0.0945	0.8078	0.3437	5.1600e-003		0.0653	0.0653		0.0653	0.0653		1,031.1804	1,031.1804	0.0198	0.0189	1,037.4560
Mobile	6.3590	14.4633	64.8858	0.1319	9.8028	0.1760	9.9788	2.6205	0.1621	2.7825		10,814.1927	10,814.1927	0.4794		10,824.2591
Total	**21.7735**	**15.6183**	**95.1407**	**0.1386**	**9.8028**	**0.4045**	**10.2073**	**2.6205**	**0.3906**	**3.0111**	**0.0000**	**11,898.8534**	**11,898.8534**	**0.5521**	**0.0189**	**11,916.3084**

	ROG	NOx	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	**10.57**	**12.61**	**8.03**	**14.56**	**15.00**	**9.75**	**14.80**	**15.00**	**9.60**	**14.34**	**0.00**	**14.91**	**14.91**	**12.30**	**19.37**	**14.91**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2015	1/14/2015	5	10	
2	Grading	Grading	1/15/2015	2/25/2015	5	30	
3	Trenching	Trenching	2/26/2015	5/1/2015	5	47	
4	Building Construction	Building Construction	6/1/2015	6/30/2017	5	545	
5	Architectural Coating	Architectural Coating	1/1/2016	6/30/2017	5	391	
6	Paving	Paving	6/25/2017	6/30/2017	5	5	

Acres of Grading (Site Preparation Phase): 16.19

Acres of Grading (Grading Phase): 16.19

Residential Indoor: 684,450; Residential Outdoor: 228,150; Non-Residential Indoor: 0; Non-Residential Outdoor: 17,642 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Crawler Tractors	2	8.00	208	0.43
Grading	Graders	4	8.00	174	0.41
Trenching	Excavators	3	8.00	162	0.38
Trenching	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Trenching	Trenchers	1	4.00	80	0.50
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Architectural Coating	Air Compressors	3	6.00	78	0.48
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	3	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	1	24.00	8.00	30.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	14.00	6.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	6	20.00	14.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	90.00	60.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	3	18.00	6.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	16.00	2.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

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					1.7170	0.0000	1.7170	0.1854	0.0000	0.1854			0.0000			0.0000
Off-Road	0.3604	3.4321	2.4256	3.1200e-003		0.2686	0.2686		0.2472	0.2472		327.4877	327.4877	0.0978		329.5408
Total	**0.3604**	**3.4321**	**2.4256**	**3.1200e-003**	**1.7170**	**0.2686**	**1.9856**	**0.1854**	**0.2472**	**0.4325**		**327.4877**	**327.4877**	**0.0978**		**329.5408**

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	0.0776	1.0667	0.9316	2.2100e-003	0.0519	0.0160	0.0679	0.0142	0.0147	0.0289		224.5713	224.5713	1.8500e-003		224.6101
Vendor	0.0933	0.6667	1.1165	1.2400e-003	0.0333	0.0101	0.0433	9.4700e-003	9.2700e-003	0.0187		124.6631	124.6631	1.1800e-003		124.6879
Worker	0.1152	0.1776	1.6680	2.4500e-003	0.2245	1.8500e-003	0.2264	0.0595	1.6700e-003	0.0612		210.6228	210.6228	0.0140		210.9167
Total	**0.2861**	**1.9110**	**3.7161**	**5.9000e-003**	**0.3096**	**0.0279**	**0.3376**	**0.0832**	**0.0257**	**0.1089**		**559.8572**	**559.8572**	**0.0170**		**560.2148**

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					0.6696	0.0000	0.6696	0.0723	0.0000	0.0723			0.0000			0.0000
Off-Road	0.3604	3.4321	2.4256	3.1200e-003		0.2686	0.2686		0.2472	0.2472	0.0000	327.4877	327.4877	0.0978		329.5408
Total	**0.3604**	**3.4321**	**2.4256**	**3.1200e-003**	**0.6696**	**0.2686**	**0.9383**	**0.0723**	**0.2472**	**0.3195**	**0.0000**	**327.4877**	**327.4877**	**0.0978**		**329.5408**

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	0.0776	1.0667	0.9316	2.2100e-003	0.0519	0.0160	0.0679	0.0142	0.0147	0.0289		224.5713	224.5713	1.8500e-003		224.6101
Vendor	0.0933	0.6667	1.1165	1.2400e-003	0.0333	0.0101	0.0433	9.4700e-003	9.2700e-003	0.0187		124.6631	124.6631	1.1800e-003		124.6879
Worker	0.1152	0.1776	1.6680	2.4500e-003	0.2245	1.8500e-003	0.2264	0.0595	1.6700e-003	0.0612		210.6228	210.6228	0.0140		210.9167
Total	**0.2861**	**1.9110**	**3.7161**	**5.9000e-003**	**0.3096**	**0.0279**	**0.3376**	**0.0832**	**0.0257**	**0.1089**		**559.8572**	**559.8572**	**0.0170**		**560.2148**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5723	0.0000	0.5723	0.0618	0.0000	0.0618			0.0000			0.0000
Off-Road	5.6704	62.8521	25.6515	0.0404		3.1916	3.1916		2.9363	2.9363		4,246.4074	4,246.4074	1.2677		4,273.0298
Total	**5.6704**	**62.8521**	**25.6515**	**0.0404**	**0.5723**	**3.1916**	**3.7639**	**0.0618**	**2.9363**	**2.9981**		**4,246.4074**	**4,246.4074**	**1.2677**		**4,273.0298**

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	0.0700	0.5001	0.8374	9.3000e-004	0.0249	7.5600e-003	0.0325	7.1000e-003	6.9500e-003	0.0141		93.4973	93.4973	8.9000e-004		93.5160
Worker	0.0672	0.1036	0.9730	1.4300e-003	0.1310	1.0800e-003	0.1320	0.0347	9.7000e-004	0.0357		122.8633	122.8633	8.1600e-003		123.0348
Total	**0.1372**	**0.6036**	**1.8104**	**2.3600e-003**	**0.1559**	**8.6400e-003**	**0.1645**	**0.0418**	**7.9200e-003**	**0.0498**		**216.3606**	**216.3606**	**9.0500e-003**		**216.5507**

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					0.2232	0.0000	0.2232	0.0241	0.0000	0.0241			0.0000			0.0000
Off-Road	5.6704	62.8521	25.6515	0.0404		3.1916	3.1916		2.9363	2.9363	0.0000	4,246.4074	4,246.4074	1.2677		4,273.0298
Total	**5.6704**	**62.8521**	**25.6515**	**0.0404**	**0.2232**	**3.1916**	**3.4148**	**0.0241**	**2.9363**	**2.9604**	**0.0000**	**4,246.4074**	**4,246.4074**	**1.2677**		**4,273.0298**

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	0.0700	0.5001	0.8374	9.3000e-004	0.0249	7.5600e-003	0.0325	7.1000e-003	6.9500e-003	0.0141		93.4973	93.4973	8.9000e-004		93.5160
Worker	0.0672	0.1036	0.9730	1.4300e-003	0.1310	1.0800e-003	0.1320	0.0347	9.7000e-004	0.0357		122.8633	122.8633	8.1600e-003		123.0348
Total	**0.1372**	**0.6036**	**1.8104**	**2.3600e-003**	**0.1559**	**8.6400e-003**	**0.1645**	**0.0418**	**7.9200e-003**	**0.0498**		**216.3606**	**216.3606**	**9.0500e-003**		**216.5507**

3.4 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2586	23.9910	16.5848	0.0238		1.4557	1.4557		1.3393	1.3393		2,503.4409	2,503.4409	0.7474		2,519.1360
Total	**2.2586**	**23.9910**	**16.5848**	**0.0238**		**1.4557**	**1.4557**		**1.3393**	**1.3393**		**2,503.4409**	**2,503.4409**	**0.7474**		**2,519.1360**

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	0.1632	1.1668	1.9539	2.1700e-003	0.0582	0.0177	0.0758	0.0166	0.0162	0.0328		218.1604	218.1604	2.0700e-003		218.2039
Worker	0.0960	0.1480	1.3900	2.0400e-003	0.1871	1.5400e-003	0.1886	0.0496	1.3900e-003	0.0510		175.5190	175.5190	0.0117		175.7640
Total	**0.2592**	**1.3148**	**3.3439**	**4.2100e-003**	**0.2453**	**0.0192**	**0.2645**	**0.0662**	**0.0176**	**0.0838**		**393.6794**	**393.6794**	**0.0137**		**393.9678**

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	2.2586	23.9910	16.5848	0.0238		1.4557	1.4557		1.3393	1.3393	0.0000	2,503.4409	2,503.4409	0.7474		2,519.1360
Total	**2.2586**	**23.9910**	**16.5848**	**0.0238**		**1.4557**	**1.4557**		**1.3393**	**1.3393**	**0.0000**	**2,503.4409**	**2,503.4409**	**0.7474**		**2,519.1360**

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	0.1632	1.1668	1.9539	2.1700e-003	0.0582	0.0177	0.0758	0.0166	0.0162	0.0328		218.1604	218.1604	2.0700e-003		218.2039
Worker	0.0960	0.1480	1.3900	2.0400e-003	0.1871	1.5400e-003	0.1886	0.0496	1.3900e-003	0.0510		175.5190	175.5190	0.0117		175.7640
Total	**0.2592**	**1.3148**	**3.3439**	**4.2100e-003**	**0.2453**	**0.0192**	**0.2645**	**0.0662**	**0.0176**	**0.0838**		**393.6794**	**393.6794**	**0.0137**		**393.9678**

3.5 Building Construction - 2015

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	1.6675	13.1564	9.0872	0.0113		1.0709	1.0709		0.9915	0.9915		1,157.9426	1,157.9426	0.3428		1,165.1422
Total	**1.6675**	**13.1564**	**9.0872**	**0.0113**		**1.0709**	**1.0709**		**0.9915**	**0.9915**		**1,157.9426**	**1,157.9426**	**0.3428**		**1,165.1422**

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	0.6995	5.0005	8.3738	9.3100e-003	0.2494	0.0756	0.3250	0.0710	0.0695	0.1405		934.9732	934.9732	8.8700e-003		935.1595
Worker	0.4320	0.6659	6.2550	9.1700e-003	0.8419	6.9300e-003	0.8488	0.2233	6.2700e-003	0.2296		789.8356	789.8356	0.0525		790.9378
Total	**1.1315**	**5.6664**	**14.6288**	**0.0185**	**1.0913**	**0.0826**	**1.1738**	**0.2943**	**0.0758**	**0.3701**		**1,724.8088**	**1,724.8088**	**0.0614**		**1,726.0973**

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	1.6675	13.1564	9.0872	0.0113		1.0709	1.0709		0.9915	0.9915	0.0000	1,157.9426	1,157.9426	0.3428		1,165.1422
Total	**1.6675**	**13.1564**	**9.0872**	**0.0113**		**1.0709**	**1.0709**		**0.9915**	**0.9915**	**0.0000**	**1,157.9426**	**1,157.9426**	**0.3428**		**1,165.1422**

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	0.6995	5.0005	8.3738	9.3100e-003	0.2494	0.0756	0.3250	0.0710	0.0695	0.1405		934.9732	934.9732	8.8700e-003		935.1595
Worker	0.4320	0.6659	6.2550	9.1700e-003	0.8419	6.9300e-003	0.8488	0.2233	6.2700e-003	0.2296		789.8356	789.8356	0.0525		790.9378
Total	**1.1315**	**5.6664**	**14.6288**	**0.0185**	**1.0913**	**0.0826**	**1.1738**	**0.2943**	**0.0758**	**0.3701**		**1,724.8088**	**1,724.8088**	**0.0614**		**1,726.0973**

3.5 Building Construction - 2016

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	1.5579	12.4573	8.9959	0.0113		0.9996	0.9996		0.9253	0.9253		1,146.3399	1,146.3399	0.3397		1,153.4731
Total	**1.5579**	**12.4573**	**8.9959**	**0.0113**		**0.9996**	**0.9996**		**0.9253**	**0.9253**		**1,146.3399**	**1,146.3399**	**0.3397**		**1,153.4731**

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	0.6086	4.4145	7.6319	9.2900e-003	0.2494	0.0599	0.3093	0.0710	0.0550	0.1260		924.9588	924.9588	7.7200e-003		925.1208
Worker	0.3712	0.5841	5.4563	9.1600e-003	0.8419	6.3800e-003	0.8483	0.2233	5.8100e-003	0.2291		761.8039	761.8039	0.0467		762.7847
Total	**0.9799**	**4.9986**	**13.0882**	**0.0185**	**1.0913**	**0.0662**	**1.1576**	**0.2943**	**0.0608**	**0.3551**		**1,686.7627**	**1,686.7627**	**0.0544**		**1,687.9055**

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	1.5579	12.4573	8.9959	0.0113		0.9996	0.9996		0.9253	0.9253	0.0000	1,146.3399	1,146.3399	0.3397		1,153.4731
Total	**1.5579**	**12.4573**	**8.9959**	**0.0113**		**0.9996**	**0.9996**		**0.9253**	**0.9253**	**0.0000**	**1,146.3399**	**1,146.3399**	**0.3397**		**1,153.4731**

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	0.6086	4.4145	7.6319	9.2900e-003	0.2494	0.0599	0.3093	0.0710	0.0550	0.1260		924.9588	924.9588	7.7200e-003		925.1208
Worker	0.3712	0.5841	5.4563	9.1600e-003	0.8419	6.3800e-003	0.8483	0.2233	5.8100e-003	0.2291		761.8039	761.8039	0.0467		762.7847
Total	**0.9799**	**4.9986**	**13.0882**	**0.0185**	**1.0913**	**0.0662**	**1.1576**	**0.2943**	**0.0608**	**0.3551**		**1,686.7627**	**1,686.7627**	**0.0544**		**1,687.9055**

3.5 Building Construction - 2017

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	1.4377	11.6764	8.8929	0.0113		0.9165	0.9165		0.8483	0.8483		1,129.4668	1,129.4668	0.3367		1,136.5382
Total	**1.4377**	**11.6764**	**8.8929**	**0.0113**		**0.9165**	**0.9165**		**0.8483**	**0.8483**		**1,129.4668**	**1,129.4668**	**0.3367**		**1,136.5382**

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	0.5436	3.9881	7.0464	9.2700e-003	0.2495	0.0507	0.3002	0.0710	0.0466	0.1176		910.0344	910.0344	7.2400e-003		910.1863
Worker	0.3151	0.5117	4.7355	9.1400e-003	0.8419	5.9400e-003	0.8478	0.2233	5.4500e-003	0.2287		732.2295	732.2295	0.0416		733.1036
Total	**0.8587**	**4.4997**	**11.7819**	**0.0184**	**1.0914**	**0.0567**	**1.1480**	**0.2943**	**0.0521**	**0.3464**		**1,642.2639**	**1,642.2639**	**0.0489**		**1,643.2900**

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	1.4377	11.6764	8.8929	0.0113		0.9165	0.9165		0.8483	0.8483	0.0000	1,129.4668	1,129.4668	0.3367		1,136.5382
Total	**1.4377**	**11.6764**	**8.8929**	**0.0113**		**0.9165**	**0.9165**		**0.8483**	**0.8483**	**0.0000**	**1,129.4668**	**1,129.4668**	**0.3367**		**1,136.5382**

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	0.5436	3.9881	7.0464	9.2700e-003	0.2495	0.0507	0.3002	0.0710	0.0466	0.1176		910.0344	910.0344	7.2400e-003		910.1863
Worker	0.3151	0.5117	4.7355	9.1400e-003	0.8419	5.9400e-003	0.8478	0.2233	5.4500e-003	0.2287		732.2295	732.2295	0.0416		733.1036
Total	**0.8587**	**4.4997**	**11.7819**	**0.0184**	**1.0914**	**0.0567**	**1.1480**	**0.2943**	**0.0521**	**0.3464**		**1,642.2639**	**1,642.2639**	**0.0489**		**1,643.2900**

3.6 Architectural Coating - 2016

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	27.5682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.1054	7.1167	5.6518	8.9100e-003		0.5898	0.5898		0.5898	0.5898		844.3442	844.3442	0.0995		846.4346
Total	**28.6736**	**7.1167**	**5.6518**	**8.9100e-003**		**0.5898**	**0.5898**		**0.5898**	**0.5898**		**844.3442**	**844.3442**	**0.0995**		**846.4346**

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	0.0609	0.4415	0.7632	9.3000e-004	0.0249	5.9900e-003	0.0309	7.1000e-003	5.5000e-003	0.0126		92.4959	92.4959	7.7000e-004		92.5121
Worker	0.0743	0.1168	1.0913	1.8300e-003	0.1684	1.2800e-003	0.1697	0.0447	1.1600e-003	0.0458		152.3608	152.3608	9.3400e-003		152.5569
Total	**0.1351**	**0.5583**	**1.8545**	**2.7600e-003**	**0.1933**	**7.2700e-003**	**0.2006**	**0.0518**	**6.6600e-003**	**0.0584**		**244.8567**	**244.8567**	**0.0101**		**245.0690**

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	27.5682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.1054	7.1167	5.6518	8.9100e-003		0.5898	0.5898		0.5898	0.5898	0.0000	844.3441	844.3441	0.0995		846.4346
Total	**28.6736**	**7.1167**	**5.6518**	**8.9100e-003**		**0.5898**	**0.5898**		**0.5898**	**0.5898**	**0.0000**	**844.3441**	**844.3441**	**0.0995**		**846.4346**

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	0.0609	0.4415	0.7632	9.3000e-004	0.0249	5.9900e-003	0.0309	7.1000e-003	5.5000e-003	0.0126		92.4959	92.4959	7.7000e-004		92.5121
Worker	0.0743	0.1168	1.0913	1.8300e-003	0.1684	1.2800e-003	0.1697	0.0447	1.1600e-003	0.0458		152.3608	152.3608	9.3400e-003		152.5569
Total	**0.1351**	**0.5583**	**1.8545**	**2.7600e-003**	**0.1933**	**7.2700e-003**	**0.2006**	**0.0518**	**6.6600e-003**	**0.0584**		**244.8567**	**244.8567**	**0.0101**		**245.0690**

3.6 Architectural Coating - 2017

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	27.5682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.9969	6.5551	5.6042	8.9100e-003		0.5200	0.5200		0.5200	0.5200		844.3442	844.3442	0.0891		846.2162
Total	**28.5652**	**6.5551**	**5.6042**	**8.9100e-003**		**0.5200**	**0.5200**		**0.5200**	**0.5200**		**844.3442**	**844.3442**	**0.0891**		**846.2162**

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	0.0544	0.3988	0.7046	9.3000e-004	0.0250	5.0700e-003	0.0300	7.1000e-003	4.6600e-003	0.0118		91.0034	91.0034	7.2000e-004		91.0186
Worker	0.0630	0.1023	0.9471	1.8300e-003	0.1684	1.1900e-003	0.1696	0.0447	1.0900e-003	0.0458		146.4459	146.4459	8.3200e-003		146.6207
Total	**0.1174**	**0.5011**	**1.6517**	**2.7600e-003**	**0.1933**	**6.2600e-003**	**0.1996**	**0.0518**	**5.7500e-003**	**0.0575**		**237.4493**	**237.4493**	**9.0400e-003**		**237.6394**

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	27.5682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.9969	6.5551	5.6042	8.9100e-003		0.5200	0.5200		0.5200	0.5200	0.0000	844.3441	844.3441	0.0891		846.2162
Total	**28.5652**	**6.5551**	**5.6042**	**8.9100e-003**		**0.5200**	**0.5200**		**0.5200**	**0.5200**	**0.0000**	**844.3441**	**844.3441**	**0.0891**		**846.2162**

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	0.0544	0.3988	0.7046	9.3000e-004	0.0250	5.0700e-003	0.0300	7.1000e-003	4.6600e-003	0.0118		91.0034	91.0034	7.2000e-004		91.0186
Worker	0.0630	0.1023	0.9471	1.8300e-003	0.1684	1.1900e-003	0.1696	0.0447	1.0900e-003	0.0458		146.4459	146.4459	8.3200e-003		146.6207
Total	**0.1174**	**0.5011**	**1.6517**	**2.7600e-003**	**0.1933**	**6.2600e-003**	**0.1996**	**0.0518**	**5.7500e-003**	**0.0575**		**237.4493**	**237.4493**	**9.0400e-003**		**237.6394**

3.7 Paving - 2017

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	1.8582	19.1671	13.8819	0.0204		1.1503	1.1503		1.0582	1.0582		2,087.2085	2,087.2085	0.6395		2,100.6383
Paving	2.4890					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**4.3472**	**19.1671**	**13.8819**	**0.0204**		**1.1503**	**1.1503**		**1.0582**	**1.0582**		**2,087.2085**	**2,087.2085**	**0.6395**		**2,100.6383**

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	0.0181	0.1329	0.2349	3.1000e-004	8.3200e-003	1.6900e-003	0.0100	2.3700e-003	1.5500e-003	3.9200e-003		30.3345	30.3345	2.4000e-004		30.3395
Worker	0.0560	0.0910	0.8419	1.6300e-003	0.1497	1.0600e-003	0.1507	0.0397	9.7000e-004	0.0407		130.1741	130.1741	7.4000e-003		130.3295
Total	**0.0741**	**0.2239**	**1.0767**	**1.9400e-003**	**0.1580**	**2.7500e-003**	**0.1607**	**0.0421**	**2.5200e-003**	**0.0446**		**160.5086**	**160.5086**	**7.6400e-003**		**160.6691**

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	1.8582	19.1671	13.8819	0.0204		1.1503	1.1503		1.0582	1.0582	0.0000	2,087.2085	2,087.2085	0.6395		2,100.6383
Paving	2.4890					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**4.3472**	**19.1671**	**13.8819**	**0.0204**		**1.1503**	**1.1503**		**1.0582**	**1.0582**	**0.0000**	**2,087.2085**	**2,087.2085**	**0.6395**		**2,100.6383**

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	0.0181	0.1329	0.2349	3.1000e-004	8.3200e-003	1.6900e-003	0.0100	2.3700e-003	1.5500e-003	3.9200e-003		30.3345	30.3345	2.4000e-004		30.3395
Worker	0.0560	0.0910	0.8419	1.6300e-003	0.1497	1.0600e-003	0.1507	0.0397	9.7000e-004	0.0407		130.1741	130.1741	7.4000e-003		130.3295
Total	**0.0741**	**0.2239**	**1.0767**	**1.9400e-003**	**0.1580**	**2.7500e-003**	**0.1607**	**0.0421**	**2.5200e-003**	**0.0446**		**160.5086**	**160.5086**	**7.6400e-003**		**160.6691**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Transit Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

Limit Parking Supply

	ROG	NOx	CO	SO2	Fugitive 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	6.3590	14.4633	64.8858	0.1319	9.8028	0.1760	9.9788	2.6205	0.1621	2.7825		10,814.1927	10,814.1927	0.4794		10,824.2591
Unmitigated	6.7369	16.5226	73.1085	0.1543	11.5327	0.2040	11.7367	3.0829	0.1879	3.2708		12,651.6492	12,651.6492	0.5521		12,663.2422

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,516.20	1,516.20	1516.20	4,183,395	3,555,886
Apartments Mid Rise	454.08	454.08	454.08	1,252,866	1,064,936
City Park	3.18	3.18	3.18	5,065	4,305
Parking Lot	0.00	0.00	0.00		
Total	1,973.46	1,973.46	1,973.46	5,441,326	4,625,127

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	12.30	5.90	6.40	37.50	15.00	47.50	86	11	3
Apartments Mid Rise	12.30	5.90	6.40	37.50	15.00	47.50	86	11	3
City Park	8.80	4.60	4.60	33.00	48.00	19.00	66	28	6
Parking Lot	8.80	4.60	4.60	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.488429	0.036082	0.211732	0.154985	0.049882	0.007459	0.020077	0.014399	0.001917	0.002182	0.008131	0.001589	0.003135

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	0.0945	0.8078	0.3437	5.1600e-003		0.0653	0.0653		0.0653	0.0653		1,031.1804	1,031.1804	0.0198	0.0189	1,037.4560
NaturalGas Unmitigated	0.1172	1.0013	0.4261	6.3900e-003		0.0810	0.0810		0.0810	0.0810		1,278.2884	1,278.2884	0.0245	0.0234	1,286.0678

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	3984	0.0430	0.3672	0.1562	2.3400e-003		0.0297	0.0297		0.0297	0.0297		468.7057	468.7057	8.9800e-003	8.5900e-003	471.5582
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
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
Apartments Low Rise	6881.45	0.0742	0.6342	0.2699	4.0500e-003		0.0513	0.0513		0.0513	0.0513		809.5826	809.5826	0.0155	0.0148	814.5096
Total		**0.1172**	**1.0013**	**0.4261**	**6.3900e-003**		**0.0810**	**0.0810**		**0.0810**	**0.0810**		**1,278.2884**	**1,278.2884**	**0.0245**	**0.0234**	**1,286.0678**

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					
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
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
Apartments Low Rise	5.55119	0.0599	0.5116	0.2177	3.2700e-003		0.0414	0.0414		0.0414	0.0414		653.0809	653.0809	0.0125	0.0120	657.0555
Apartments Mid Rise	3.21385	0.0347	0.2962	0.1260	1.8900e-003		0.0240	0.0240		0.0240	0.0240		378.0995	378.0995	7.2500e-003	6.9300e-003	380.4005
Total		**0.0945**	**0.8078**	**0.3437**	**5.1600e-003**		**0.0653**	**0.0653**		**0.0653**	**0.0653**		**1,031.1804**	**1,031.1804**	**0.0198**	**0.0189**	**1,037.4560**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

	ROG	NOx	CO	SO2	Fugitive 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	15.3200	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633	0.0000	53.4803	53.4803	0.0530	0.0000	54.5934
Unmitigated	17.4929	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633	0.0000	53.4803	53.4803	0.0530	0.0000	54.5934

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	3.0453					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	13.5254					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	0.9221	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633		53.4803	53.4803	0.0530		54.5934
Total	**17.4929**	**0.3472**	**29.9112**	**1.5700e-003**		**0.1633**	**0.1633**		**0.1633**	**0.1633**	**0.0000**	**53.4803**	**53.4803**	**0.0530**	**0.0000**	**54.5934**

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	0.8724					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	13.5254					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	0.9221	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633		53.4803	53.4803	0.0530		54.5934
Total	**15.3200**	**0.3472**	**29.9112**	**1.5700e-003**		**0.1633**	**0.1633**		**0.1633**	**0.1633**	**0.0000**	**53.4803**	**53.4803**	**0.0530**	**0.0000**	**54.5934**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

Heritage Ridge

Santa Barbara-South of Santa Ynez Range County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	4.75	Acre	4.75	206,910.00	0
City Park	2.00	Acre	2.00	87,120.00	0
Apartments Low Rise	228.00	Dwelling Unit	6.17	218,000.00	620
Apartments Mid Rise	132.00	Dwelling Unit	3.27	120,000.00	145

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2018
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Apartments Low Rise represents workforce housing. Apartments Mid Rise represents senior housing.

Construction Phase - See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Trips and VMT - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Architectural Coating - Residential Interior: 684,450 SF. Residential Exterior: 228,150 SF. Non-Residential Interior: 0 SF. Non-Residential Exterior: Parking Lot 12,415 SF, City Park 5,227 SF (6% of total SF per CalEEMod Appendix E, Revised July 2013).

Construction Off-road Equipment Mitigation - None.

Vehicle Trips - Based on trip rates provided in the North Willow Springs Project Traffic, Circulation, and Parking Study (ATE 2014).

Area Coating - See note under Construction - Architectural Coatings.

Energy Use - CalEEMod default energy factors for Apartments Low Rise used for both Apartments Low Rise (workforce housing) and Apartments Mid Rise (senior housing).

Water And Wastewater - Default values.

Solid Waste - Default values.

Mobile Land Use Mitigation - Increase Density: 22.2 dwelling units/acre. Increase Transit Accessibility, Distance to Transit Station: 0.75 miles. Improve Pedestrian Network: Project Site and Connecting Off-Site. Provide Traffic Calming Measures: 100% Streets with Improvement, 100% Intersections with Improvement. Limit Parking Supply, % Reduction in Spaces: 7.2%.

Area Mitigation - Use Low VOC Paint for residential interior (50 g/L) and exterior (100 g/L).

Energy Mitigation - Exceed Title 24, % Improvement: 25%.

Water Mitigation - Use Water-Efficient Irrigation Systems, % Reduction: 6.1% (default value).

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					
2015	5.8318	63.4781	27.8506	0.0427	2.0266	3.2004	3.9286	0.2943	2.9444	3.0480	0.0000	4,458.8419	4,458.8419	1.2768	0.0000	4,485.6550
2016	31.5540	25.3033	33.4258	0.0411	1.2846	1.6643	2.9489	0.3461	1.5838	1.9299	0.0000	3,889.1844	3,889.1844	0.5041	0.0000	3,899.7697
2017	35.5856	42.7903	46.6696	0.0634	1.4427	2.6536	4.0963	0.3881	2.4879	2.8761	0.0000	6,065.6744	6,065.6744	1.1313	0.0000	6,089.4309
Total	**72.9714**	**131.5717**	**107.9460**	**0.1472**	**4.7539**	**7.5183**	**10.9738**	**1.0285**	**7.0161**	**7.8540**	**0.0000**	**14,413.7007**	**14,413.7007**	**2.9121**	**0.0000**	**14,474.8556**

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					
2015	5.8318	63.4781	27.8506	0.0427	1.0913	3.2004	3.5795	0.2943	2.9444	3.0103	0.0000	4,458.8419	4,458.8419	1.2768	0.0000	4,485.6550
2016	31.5540	25.3033	33.4258	0.0411	1.2846	1.6643	2.9489	0.3461	1.5838	1.9299	0.0000	3,889.1844	3,889.1844	0.5041	0.0000	3,899.7697
2017	35.5856	42.7903	46.6696	0.0634	1.4427	2.6536	4.0963	0.3881	2.4879	2.8761	0.0000	6,065.6744	6,065.6744	1.1313	0.0000	6,089.4309
Total	**72.9714**	**131.5717**	**107.9460**	**0.1472**	**3.8186**	**7.5183**	**10.6247**	**1.0285**	**7.0161**	**7.8163**	**0.0000**	**14,413.7007**	**14,413.7007**	**2.9121**	**0.0000**	**14,474.8556**

	ROG	NOx	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**	**19.67**	**0.00**	**3.18**	**0.00**	**0.00**	**0.48**	**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	17.4929	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633	0.0000	53.4803	53.4803	0.0530	0.0000	54.5934
Energy	0.1172	1.0013	0.4261	6.3900e-003		0.0810	0.0810		0.0810	0.0810		1,278.2884	1,278.2884	0.0245	0.0234	1,286.0678
Mobile	7.3540	17.6969	81.6520	0.1515	11.5327	0.2051	11.7378	3.0829	0.1889	3.2718		12,424.2596	12,424.2596	0.5524		12,435.8594
Total	**24.9640**	**19.0454**	**111.9893**	**0.1595**	**11.5327**	**0.4493**	**11.9820**	**3.0829**	**0.4331**	**3.5160**	**0.0000**	**13,756.0283**	**13,756.0283**	**0.6299**	**0.0234**	**13,776.5206**

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	15.3200	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633	0.0000	53.4803	53.4803	0.0530	0.0000	54.5934
Energy	0.0945	0.8078	0.3437	5.1600e-003		0.0653	0.0653		0.0653	0.0653		1,031.1804	1,031.1804	0.0198	0.0189	1,037.4560
Mobile	6.9731	15.4826	73.4532	0.1296	9.8028	0.1771	9.9799	2.6205	0.1631	2.7836		10,618.9104	10,618.9104	0.4797		10,628.9837
Total	**22.3876**	**16.6375**	**103.7081**	**0.1363**	**9.8028**	**0.4056**	**10.2084**	**2.6205**	**0.3917**	**3.0121**	**0.0000**	**11,703.5711**	**11,703.5711**	**0.5524**	**0.0189**	**11,721.0331**

	ROG	NOx	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	**10.32**	**12.64**	**7.39**	**14.54**	**15.00**	**9.72**	**14.80**	**15.00**	**9.57**	**14.33**	**0.00**	**14.92**	**14.92**	**12.29**	**19.37**	**14.92**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2015	1/14/2015	5	10	
2	Grading	Grading	1/15/2015	2/25/2015	5	30	
3	Trenching	Trenching	2/26/2015	5/1/2015	5	47	
4	Building Construction	Building Construction	6/1/2015	6/30/2017	5	545	
5	Architectural Coating	Architectural Coating	1/1/2016	6/30/2017	5	391	
6	Paving	Paving	6/25/2017	6/30/2017	5	5	

Acres of Grading (Site Preparation Phase): 16.19

Acres of Grading (Grading Phase): 16.19

Residential Indoor: 684,450; Residential Outdoor: 228,150; Non-Residential Indoor: 0; Non-Residential Outdoor: 17,642 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Crawler Tractors	2	8.00	208	0.43
Grading	Graders	4	8.00	174	0.41
Trenching	Excavators	3	8.00	162	0.38
Trenching	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Trenching	Trenchers	1	4.00	80	0.50
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Architectural Coating	Air Compressors	3	6.00	78	0.48
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	3	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	1	24.00	8.00	30.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	14.00	6.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	6	20.00	14.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	90.00	60.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	3	18.00	6.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	16.00	2.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

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					1.7170	0.0000	1.7170	0.1854	0.0000	0.1854			0.0000			0.0000
Off-Road	0.3604	3.4321	2.4256	3.1200e-003		0.2686	0.2686		0.2472	0.2472		327.4877	327.4877	0.0978		329.5408
Total	**0.3604**	**3.4321**	**2.4256**	**3.1200e-003**	**1.7170**	**0.2686**	**1.9856**	**0.1854**	**0.2472**	**0.4325**		**327.4877**	**327.4877**	**0.0978**		**329.5408**

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	0.0902	1.0931	1.1738	2.2100e-003	0.0519	0.0161	0.0680	0.0142	0.0148	0.0290		224.0378	224.0378	1.8700e-003		224.0771
Vendor	0.1165	0.6771	1.5523	1.2300e-003	0.0333	0.0103	0.0436	9.4700e-003	9.4700e-003	0.0189		123.1966	123.1966	1.2200e-003		123.2223
Worker	0.1268	0.2026	1.7741	2.3900e-003	0.2245	1.8500e-003	0.2264	0.0595	1.6700e-003	0.0612		205.7778	205.7778	0.0140		206.0717
Total	**0.3336**	**1.9727**	**4.5001**	**5.8300e-003**	**0.3096**	**0.0283**	**0.3379**	**0.0832**	**0.0259**	**0.1091**		**553.0122**	**553.0122**	**0.0171**		**553.3711**

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					0.6696	0.0000	0.6696	0.0723	0.0000	0.0723			0.0000			0.0000
Off-Road	0.3604	3.4321	2.4256	3.1200e-003		0.2686	0.2686		0.2472	0.2472	0.0000	327.4877	327.4877	0.0978		329.5408
Total	**0.3604**	**3.4321**	**2.4256**	**3.1200e-003**	**0.6696**	**0.2686**	**0.9383**	**0.0723**	**0.2472**	**0.3195**	**0.0000**	**327.4877**	**327.4877**	**0.0978**		**329.5408**

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	0.0902	1.0931	1.1738	2.2100e-003	0.0519	0.0161	0.0680	0.0142	0.0148	0.0290		224.0378	224.0378	1.8700e-003		224.0771
Vendor	0.1165	0.6771	1.5523	1.2300e-003	0.0333	0.0103	0.0436	9.4700e-003	9.4700e-003	0.0189		123.1966	123.1966	1.2200e-003		123.2223
Worker	0.1268	0.2026	1.7741	2.3900e-003	0.2245	1.8500e-003	0.2264	0.0595	1.6700e-003	0.0612		205.7778	205.7778	0.0140		206.0717
Total	**0.3336**	**1.9727**	**4.5001**	**5.8300e-003**	**0.3096**	**0.0283**	**0.3379**	**0.0832**	**0.0259**	**0.1091**		**553.0122**	**553.0122**	**0.0171**		**553.3711**

3.3 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5723	0.0000	0.5723	0.0618	0.0000	0.0618			0.0000			0.0000
Off-Road	5.6704	62.8521	25.6515	0.0404		3.1916	3.1916		2.9363	2.9363		4,246.4074	4,246.4074	1.2677		4,273.0298
Total	**5.6704**	**62.8521**	**25.6515**	**0.0404**	**0.5723**	**3.1916**	**3.7639**	**0.0618**	**2.9363**	**2.9981**		**4,246.4074**	**4,246.4074**	**1.2677**		**4,273.0298**

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	0.0874	0.5078	1.1642	9.3000e-004	0.0249	7.7300e-003	0.0327	7.1000e-003	7.1000e-003	0.0142		92.3974	92.3974	9.2000e-004		92.4167
Worker	0.0740	0.1182	1.0349	1.4000e-003	0.1310	1.0800e-003	0.1320	0.0347	9.7000e-004	0.0357		120.0371	120.0371	8.1600e-003		120.2085
Total	**0.1614**	**0.6260**	**2.1991**	**2.3300e-003**	**0.1559**	**8.8100e-003**	**0.1647**	**0.0418**	**8.0700e-003**	**0.0499**		**212.4345**	**212.4345**	**9.0800e-003**		**212.6252**

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					0.2232	0.0000	0.2232	0.0241	0.0000	0.0241			0.0000			0.0000
Off-Road	5.6704	62.8521	25.6515	0.0404		3.1916	3.1916		2.9363	2.9363	0.0000	4,246.4074	4,246.4074	1.2677		4,273.0298
Total	**5.6704**	**62.8521**	**25.6515**	**0.0404**	**0.2232**	**3.1916**	**3.4148**	**0.0241**	**2.9363**	**2.9604**	**0.0000**	**4,246.4074**	**4,246.4074**	**1.2677**		**4,273.0298**

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	0.0874	0.5078	1.1642	9.3000e-004	0.0249	7.7300e-003	0.0327	7.1000e-003	7.1000e-003	0.0142		92.3974	92.3974	9.2000e-004		92.4167
Worker	0.0740	0.1182	1.0349	1.4000e-003	0.1310	1.0800e-003	0.1320	0.0347	9.7000e-004	0.0357		120.0371	120.0371	8.1600e-003		120.2085
Total	**0.1614**	**0.6260**	**2.1991**	**2.3300e-003**	**0.1559**	**8.8100e-003**	**0.1647**	**0.0418**	**8.0700e-003**	**0.0499**		**212.4345**	**212.4345**	**9.0800e-003**		**212.6252**

3.4 Trenching - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.2586	23.9910	16.5848	0.0238		1.4557	1.4557		1.3393	1.3393		2,503.4409	2,503.4409	0.7474		2,519.1360
Total	**2.2586**	**23.9910**	**16.5848**	**0.0238**		**1.4557**	**1.4557**		**1.3393**	**1.3393**		**2,503.4409**	**2,503.4409**	**0.7474**		**2,519.1360**

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	0.2039	1.1848	2.7165	2.1600e-003	0.0582	0.0180	0.0762	0.0166	0.0166	0.0331		215.5940	215.5940	2.1400e-003		215.6390
Worker	0.1057	0.1688	1.4784	1.9900e-003	0.1871	1.5400e-003	0.1886	0.0496	1.3900e-003	0.0510		171.4815	171.4815	0.0117		171.7265
Total	**0.3096**	**1.3537**	**4.1948**	**4.1500e-003**	**0.2453**	**0.0196**	**0.2649**	**0.0662**	**0.0180**	**0.0842**		**387.0756**	**387.0756**	**0.0138**		**387.3655**

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	2.2586	23.9910	16.5848	0.0238		1.4557	1.4557		1.3393	1.3393	0.0000	2,503.4409	2,503.4409	0.7474		2,519.1360
Total	**2.2586**	**23.9910**	**16.5848**	**0.0238**		**1.4557**	**1.4557**		**1.3393**	**1.3393**	**0.0000**	**2,503.4409**	**2,503.4409**	**0.7474**		**2,519.1360**

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	0.2039	1.1848	2.7165	2.1600e-003	0.0582	0.0180	0.0762	0.0166	0.0166	0.0331		215.5940	215.5940	2.1400e-003		215.6390
Worker	0.1057	0.1688	1.4784	1.9900e-003	0.1871	1.5400e-003	0.1886	0.0496	1.3900e-003	0.0510		171.4815	171.4815	0.0117		171.7265
Total	**0.3096**	**1.3537**	**4.1948**	**4.1500e-003**	**0.2453**	**0.0196**	**0.2649**	**0.0662**	**0.0180**	**0.0842**		**387.0756**	**387.0756**	**0.0138**		**387.3655**

3.5 Building Construction - 2015

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	1.6675	13.1564	9.0872	0.0113		1.0709	1.0709		0.9915	0.9915		1,157.9426	1,157.9426	0.3428		1,165.1422
Total	**1.6675**	**13.1564**	**9.0872**	**0.0113**		**1.0709**	**1.0709**		**0.9915**	**0.9915**		**1,157.9426**	**1,157.9426**	**0.3428**		**1,165.1422**

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	0.8740	5.0779	11.6420	9.2500e-003	0.2494	0.0773	0.3267	0.0710	0.0710	0.1420		923.9744	923.9744	9.1800e-003		924.1671
Worker	0.4756	0.7597	6.6527	8.9700e-003	0.8419	6.9300e-003	0.8488	0.2233	6.2700e-003	0.2296		771.6669	771.6669	0.0525		772.7690
Total	**1.3497**	**5.8376**	**18.2946**	**0.0182**	**1.0913**	**0.0842**	**1.1755**	**0.2943**	**0.0773**	**0.3716**		**1,695.6413**	**1,695.6413**	**0.0617**		**1,696.9362**

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	1.6675	13.1564	9.0872	0.0113		1.0709	1.0709		0.9915	0.9915	0.0000	1,157.9426	1,157.9426	0.3428		1,165.1422
Total	**1.6675**	**13.1564**	**9.0872**	**0.0113**		**1.0709**	**1.0709**		**0.9915**	**0.9915**	**0.0000**	**1,157.9426**	**1,157.9426**	**0.3428**		**1,165.1422**

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	0.8740	5.0779	11.6420	9.2500e-003	0.2494	0.0773	0.3267	0.0710	0.0710	0.1420		923.9744	923.9744	9.1800e-003		924.1671
Worker	0.4756	0.7597	6.6527	8.9700e-003	0.8419	6.9300e-003	0.8488	0.2233	6.2700e-003	0.2296		771.6669	771.6669	0.0525		772.7690
Total	**1.3497**	**5.8376**	**18.2946**	**0.0182**	**1.0913**	**0.0842**	**1.1755**	**0.2943**	**0.0773**	**0.3716**		**1,695.6413**	**1,695.6413**	**0.0617**		**1,696.9362**

3.5 Building Construction - 2016

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	1.5579	12.4573	8.9959	0.0113		0.9996	0.9996		0.9253	0.9253		1,146.3399	1,146.3399	0.3397		1,153.4731
Total	**1.5579**	**12.4573**	**8.9959**	**0.0113**		**0.9996**	**0.9996**		**0.9253**	**0.9253**		**1,146.3399**	**1,146.3399**	**0.3397**		**1,153.4731**

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	0.7584	4.4812	10.7840	9.2300e-003	0.2494	0.0611	0.3105	0.0710	0.0561	0.1271		914.0199	914.0199	8.0000e-003		914.1879
Worker	0.4069	0.6668	5.7631	8.9500e-003	0.8419	6.3800e-003	0.8483	0.2233	5.8100e-003	0.2291		744.2320	744.2320	0.0467		745.2128
Total	**1.1653**	**5.1479**	**16.5471**	**0.0182**	**1.0913**	**0.0674**	**1.1588**	**0.2943**	**0.0619**	**0.3562**		**1,658.2519**	**1,658.2519**	**0.0547**		**1,659.4006**

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	1.5579	12.4573	8.9959	0.0113		0.9996	0.9996		0.9253	0.9253	0.0000	1,146.3399	1,146.3399	0.3397		1,153.4731
Total	**1.5579**	**12.4573**	**8.9959**	**0.0113**		**0.9996**	**0.9996**		**0.9253**	**0.9253**	**0.0000**	**1,146.3399**	**1,146.3399**	**0.3397**		**1,153.4731**

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	0.7584	4.4812	10.7840	9.2300e-003	0.2494	0.0611	0.3105	0.0710	0.0561	0.1271		914.0199	914.0199	8.0000e-003		914.1879
Worker	0.4069	0.6668	5.7631	8.9500e-003	0.8419	6.3800e-003	0.8483	0.2233	5.8100e-003	0.2291		744.2320	744.2320	0.0467		745.2128
Total	**1.1653**	**5.1479**	**16.5471**	**0.0182**	**1.0913**	**0.0674**	**1.1588**	**0.2943**	**0.0619**	**0.3562**		**1,658.2519**	**1,658.2519**	**0.0547**		**1,659.4006**

3.5 Building Construction - 2017

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	1.4377	11.6764	8.8929	0.0113		0.9165	0.9165		0.8483	0.8483		1,129.4668	1,129.4668	0.3367		1,136.5382
Total	**1.4377**	**11.6764**	**8.8929**	**0.0113**		**0.9165**	**0.9165**		**0.8483**	**0.8483**		**1,129.4668**	**1,129.4668**	**0.3367**		**1,136.5382**

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	0.6729	4.0469	10.1129	9.2100e-003	0.2495	0.0517	0.3012	0.0710	0.0475	0.1185		899.2382	899.2382	7.5200e-003		899.3961
Worker	0.3433	0.5845	4.9568	8.9400e-003	0.8419	5.9400e-003	0.8478	0.2233	5.4500e-003	0.2287		715.2955	715.2955	0.0416		716.1697
Total	**1.0162**	**4.6314**	**15.0697**	**0.0182**	**1.0914**	**0.0576**	**1.1490**	**0.2943**	**0.0530**	**0.3473**		**1,614.5338**	**1,614.5338**	**0.0491**		**1,615.5658**

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	1.4377	11.6764	8.8929	0.0113		0.9165	0.9165		0.8483	0.8483	0.0000	1,129.4668	1,129.4668	0.3367		1,136.5382
Total	**1.4377**	**11.6764**	**8.8929**	**0.0113**		**0.9165**	**0.9165**		**0.8483**	**0.8483**	**0.0000**	**1,129.4668**	**1,129.4668**	**0.3367**		**1,136.5382**

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	0.6729	4.0469	10.1129	9.2100e-003	0.2495	0.0517	0.3012	0.0710	0.0475	0.1185		899.2382	899.2382	7.5200e-003		899.3961
Worker	0.3433	0.5845	4.9568	8.9400e-003	0.8419	5.9400e-003	0.8478	0.2233	5.4500e-003	0.2287		715.2955	715.2955	0.0416		716.1697
Total	**1.0162**	**4.6314**	**15.0697**	**0.0182**	**1.0914**	**0.0576**	**1.1490**	**0.2943**	**0.0530**	**0.3473**		**1,614.5338**	**1,614.5338**	**0.0491**		**1,615.5658**

3.6 Architectural Coating - 2016

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	27.5682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.1054	7.1167	5.6518	8.9100e-003		0.5898	0.5898		0.5898	0.5898		844.3442	844.3442	0.0995		846.4346
Total	**28.6736**	**7.1167**	**5.6518**	**8.9100e-003**		**0.5898**	**0.5898**		**0.5898**	**0.5898**		**844.3442**	**844.3442**	**0.0995**		**846.4346**

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	0.0758	0.4481	1.0784	9.2000e-004	0.0249	6.1100e-003	0.0311	7.1000e-003	5.6100e-003	0.0127		91.4020	91.4020	8.0000e-004		91.4188
Worker	0.0814	0.1334	1.1526	1.7900e-003	0.1684	1.2800e-003	0.1697	0.0447	1.1600e-003	0.0458		148.8464	148.8464	9.3400e-003		149.0426
Total	**0.1572**	**0.5815**	**2.2310**	**2.7100e-003**	**0.1933**	**7.3900e-003**	**0.2007**	**0.0518**	**6.7700e-003**	**0.0585**		**240.2484**	**240.2484**	**0.0101**		**240.4613**

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	27.5682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	1.1054	7.1167	5.6518	8.9100e-003		0.5898	0.5898		0.5898	0.5898	0.0000	844.3441	844.3441	0.0995		846.4346
Total	**28.6736**	**7.1167**	**5.6518**	**8.9100e-003**		**0.5898**	**0.5898**		**0.5898**	**0.5898**	**0.0000**	**844.3441**	**844.3441**	**0.0995**		**846.4346**

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	0.0758	0.4481	1.0784	9.2000e-004	0.0249	6.1100e-003	0.0311	7.1000e-003	5.6100e-003	0.0127		91.4020	91.4020	8.0000e-004		91.4188
Worker	0.0814	0.1334	1.1526	1.7900e-003	0.1684	1.2800e-003	0.1697	0.0447	1.1600e-003	0.0458		148.8464	148.8464	9.3400e-003		149.0426
Total	**0.1572**	**0.5815**	**2.2310**	**2.7100e-003**	**0.1933**	**7.3900e-003**	**0.2007**	**0.0518**	**6.7700e-003**	**0.0585**		**240.2484**	**240.2484**	**0.0101**		**240.4613**

3.6 Architectural Coating - 2017

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	27.5682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.9969	6.5551	5.6042	8.9100e-003		0.5200	0.5200		0.5200	0.5200		844.3442	844.3442	0.0891		846.2162
Total	**28.5652**	**6.5551**	**5.6042**	**8.9100e-003**		**0.5200**	**0.5200**		**0.5200**	**0.5200**		**844.3442**	**844.3442**	**0.0891**		**846.2162**

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	0.0673	0.4047	1.0113	9.2000e-004	0.0250	5.1700e-003	0.0301	7.1000e-003	4.7500e-003	0.0119		89.9238	89.9238	7.5000e-004		89.9396
Worker	0.0687	0.1169	0.9914	1.7900e-003	0.1684	1.1900e-003	0.1696	0.0447	1.0900e-003	0.0458		143.0591	143.0591	8.3200e-003		143.2339
Total	**0.1360**	**0.5216**	**2.0026**	**2.7100e-003**	**0.1933**	**6.3600e-003**	**0.1997**	**0.0518**	**5.8400e-003**	**0.0576**		**232.9829**	**232.9829**	**9.0700e-003**		**233.1735**

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	27.5682					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.9969	6.5551	5.6042	8.9100e-003		0.5200	0.5200		0.5200	0.5200	0.0000	844.3441	844.3441	0.0891		846.2162
Total	**28.5652**	**6.5551**	**5.6042**	**8.9100e-003**		**0.5200**	**0.5200**		**0.5200**	**0.5200**	**0.0000**	**844.3441**	**844.3441**	**0.0891**		**846.2162**

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	0.0673	0.4047	1.0113	9.2000e-004	0.0250	5.1700e-003	0.0301	7.1000e-003	4.7500e-003	0.0119		89.9238	89.9238	7.5000e-004		89.9396
Worker	0.0687	0.1169	0.9914	1.7900e-003	0.1684	1.1900e-003	0.1696	0.0447	1.0900e-003	0.0458		143.0591	143.0591	8.3200e-003		143.2339
Total	**0.1360**	**0.5216**	**2.0026**	**2.7100e-003**	**0.1933**	**6.3600e-003**	**0.1997**	**0.0518**	**5.8400e-003**	**0.0576**		**232.9829**	**232.9829**	**9.0700e-003**		**233.1735**

3.7 Paving - 2017

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	1.8582	19.1671	13.8819	0.0204		1.1503	1.1503		1.0582	1.0582		2,087.2085	2,087.2085	0.6395		2,100.6383
Paving	2.4890					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**4.3472**	**19.1671**	**13.8819**	**0.0204**		**1.1503**	**1.1503**		**1.0582**	**1.0582**		**2,087.2085**	**2,087.2085**	**0.6395**		**2,100.6383**

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	0.0224	0.1349	0.3371	3.1000e-004	8.3200e-003	1.7200e-003	0.0100	2.3700e-003	1.5800e-003	3.9500e-003		29.9746	29.9746	2.5000e-004		29.9799
Worker	0.0610	0.1039	0.8812	1.5900e-003	0.1497	1.0600e-003	0.1507	0.0397	9.7000e-004	0.0407		127.1637	127.1637	7.4000e-003		127.3191
Total	**0.0835**	**0.2388**	**1.2183**	**1.9000e-003**	**0.1580**	**2.7800e-003**	**0.1608**	**0.0421**	**2.5500e-003**	**0.0446**		**157.1383**	**157.1383**	**7.6500e-003**		**157.2989**

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	1.8582	19.1671	13.8819	0.0204		1.1503	1.1503		1.0582	1.0582	0.0000	2,087.2085	2,087.2085	0.6395		2,100.6383
Paving	2.4890					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**4.3472**	**19.1671**	**13.8819**	**0.0204**		**1.1503**	**1.1503**		**1.0582**	**1.0582**	**0.0000**	**2,087.2085**	**2,087.2085**	**0.6395**		**2,100.6383**

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	0.0224	0.1349	0.3371	3.1000e-004	8.3200e-003	1.7200e-003	0.0100	2.3700e-003	1.5800e-003	3.9500e-003		29.9746	29.9746	2.5000e-004		29.9799
Worker	0.0610	0.1039	0.8812	1.5900e-003	0.1497	1.0600e-003	0.1507	0.0397	9.7000e-004	0.0407		127.1637	127.1637	7.4000e-003		127.3191
Total	**0.0835**	**0.2388**	**1.2183**	**1.9000e-003**	**0.1580**	**2.7800e-003**	**0.1608**	**0.0421**	**2.5500e-003**	**0.0446**		**157.1383**	**157.1383**	**7.6500e-003**		**157.2989**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Transit Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

Limit Parking Supply

	ROG	NOx	CO	SO2	Fugitive 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	6.9731	15.4826	73.4532	0.1296	9.8028	0.1771	9.9799	2.6205	0.1631	2.7836		10,618.9104	10,618.9104	0.4797		10,628.9837
Unmitigated	7.3540	17.6969	81.6520	0.1515	11.5327	0.2051	11.7378	3.0829	0.1889	3.2718		12,424.2596	12,424.2596	0.5524		12,435.8594

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,516.20	1,516.20	1516.20	4,183,395	3,555,886
Apartments Mid Rise	454.08	454.08	454.08	1,252,866	1,064,936
City Park	3.18	3.18	3.18	5,065	4,305
Parking Lot	0.00	0.00	0.00		
Total	1,973.46	1,973.46	1,973.46	5,441,326	4,625,127

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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	12.30	5.90	6.40	37.50	15.00	47.50	86	11	3
Apartments Mid Rise	12.30	5.90	6.40	37.50	15.00	47.50	86	11	3
City Park	8.80	4.60	4.60	33.00	48.00	19.00	66	28	6
Parking Lot	8.80	4.60	4.60	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.488429	0.036082	0.211732	0.154985	0.049882	0.007459	0.020077	0.014399	0.001917	0.002182	0.008131	0.001589	0.003135

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	0.0945	0.8078	0.3437	5.1600e-003		0.0653	0.0653		0.0653	0.0653		1,031.1804	1,031.1804	0.0198	0.0189	1,037.4560
NaturalGas Unmitigated	0.1172	1.0013	0.4261	6.3900e-003		0.0810	0.0810		0.0810	0.0810		1,278.2884	1,278.2884	0.0245	0.0234	1,286.0678

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	3984	0.0430	0.3672	0.1562	2.3400e-003		0.0297	0.0297		0.0297	0.0297		468.7057	468.7057	8.9800e-003	8.5900e-003	471.5582
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
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
Apartments Low Rise	6881.45	0.0742	0.6342	0.2699	4.0500e-003		0.0513	0.0513		0.0513	0.0513		809.5826	809.5826	0.0155	0.0148	814.5096
Total		**0.1172**	**1.0013**	**0.4261**	**6.3900e-003**		**0.0810**	**0.0810**		**0.0810**	**0.0810**		**1,278.2884**	**1,278.2884**	**0.0245**	**0.0234**	**1,286.0678**

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					
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
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
Apartments Low Rise	5.55119	0.0599	0.5116	0.2177	3.2700e-003		0.0414	0.0414		0.0414	0.0414		653.0809	653.0809	0.0125	0.0120	657.0555
Apartments Mid Rise	3.21385	0.0347	0.2962	0.1260	1.8900e-003		0.0240	0.0240		0.0240	0.0240		378.0995	378.0995	7.2500e-003	6.9300e-003	380.4005
Total		**0.0945**	**0.8078**	**0.3437**	**5.1600e-003**		**0.0653**	**0.0653**		**0.0653**	**0.0653**		**1,031.1804**	**1,031.1804**	**0.0198**	**0.0189**	**1,037.4560**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

	ROG	NOx	CO	SO2	Fugitive 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	15.3200	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633	0.0000	53.4803	53.4803	0.0530	0.0000	54.5934
Unmitigated	17.4929	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633	0.0000	53.4803	53.4803	0.0530	0.0000	54.5934

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	3.0453					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	13.5254					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	0.9221	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633		53.4803	53.4803	0.0530		54.5934
Total	**17.4929**	**0.3472**	**29.9112**	**1.5700e-003**		**0.1633**	**0.1633**		**0.1633**	**0.1633**	**0.0000**	**53.4803**	**53.4803**	**0.0530**	**0.0000**	**54.5934**

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	0.8724					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	13.5254					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	0.9221	0.3472	29.9112	1.5700e-003		0.1633	0.1633		0.1633	0.1633		53.4803	53.4803	0.0530		54.5934
Total	**15.3200**	**0.3472**	**29.9112**	**1.5700e-003**		**0.1633**	**0.1633**		**0.1633**	**0.1633**	**0.0000**	**53.4803**	**53.4803**	**0.0530**	**0.0000**	**54.5934**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Vegetation

Heritage Ridge Pre-Construction Export

Santa Barbara-South of Santa Ynez Range County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	16.19	705,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See 1.0, Project Characteristics

Land Use - User Defined Residential for pre-construction export of stockpiled material.

Construction Phase - See 3.0, Construction Detail

Off-road Equipment - See 3.0, Construction Detail

Grading - See 3.0, Construction Detail

Trips and VMT - 10,000 one-way haul-truck trips

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					
2014	10.0579	134.2654	108.0707	0.2296	6.0988	2.8031	8.9019	1.5302	2.5780	4.1081	0.0000	23,567.0480	23,567.0480	0.5527	0.0000	23,578.6550
Total	**10.0579**	**134.2654**	**108.0707**	**0.2296**	**6.0988**	**2.8031**	**8.9019**	**1.5302**	**2.5780**	**4.1081**	**0.0000**	**23,567.0480**	**23,567.0480**	**0.5527**	**0.0000**	**23,578.6550**

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					
2014	10.0579	134.2654	108.0707	0.2296	5.5260	2.8031	8.3291	1.4568	2.5780	4.0348	0.0000	23,567.0480	23,567.0480	0.5527	0.0000	23,578.6550
Total	**10.0579**	**134.2654**	**108.0707**	**0.2296**	**5.5260**	**2.8031**	**8.3291**	**1.4568**	**2.5780**	**4.0348**	**0.0000**	**23,567.0480**	**23,567.0480**	**0.5527**	**0.0000**	**23,578.6550**

	ROG	NOx	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**	**9.39**	**0.00**	**6.43**	**4.79**	**0.00**	**1.79**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	10/1/2014	11/17/2014	5	34	

Acres of Grading (Grading Phase): 16.19

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Crawler Tractors	1	8.00	208	0.43
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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	2	6.00	4.00	10,000.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.9391	0.0000	0.9391	0.1203	0.0000	0.1203			0.0000			0.0000
Off-Road	1.0827	13.3445	5.3133	0.0108		0.6567	0.6567		0.6042	0.6042		1,145.9617	1,145.9617	0.3386		1,153.0733
Total	**1.0827**	**13.3445**	**5.3133**	**0.0108**	**0.9391**	**0.6567**	**1.5958**	**0.1203**	**0.6042**	**0.7244**		**1,145.9617**	**1,145.9617**	**0.3386**		**1,153.0733**

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	8.8873	120.4866	101.6594	0.2176	5.0870	2.1388	7.2259	1.3903	1.9669	3.3572		22,303.7743	22,303.7743	0.2095		22,308.1732
Vendor	0.0548	0.3835	0.6239	6.2000e-004	0.0166	7.0300e-003	0.0237	4.7300e-003	6.4600e-003	0.0112		63.0886	63.0886	7.1000e-004		63.1035
Worker	0.0331	0.0507	0.4741	6.1000e-004	0.0561	5.0000e-004	0.0566	0.0149	4.5000e-004	0.0153		54.2234	54.2234	3.8900e-003		54.3050
Total	**8.9752**	**120.9209**	**102.7574**	**0.2188**	**5.1598**	**2.1464**	**7.3062**	**1.4099**	**1.9738**	**3.3837**		**22,421.0863**	**22,421.0863**	**0.2141**		**22,425.5817**

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					0.3662	0.0000	0.3662	0.0469	0.0000	0.0469			0.0000			0.0000
Off-Road	1.0827	13.3445	5.3133	0.0108		0.6567	0.6567		0.6042	0.6042	0.0000	1,145.9617	1,145.9617	0.3386		1,153.0733
Total	**1.0827**	**13.3445**	**5.3133**	**0.0108**	**0.3662**	**0.6567**	**1.0229**	**0.0469**	**0.6042**	**0.6511**	**0.0000**	**1,145.9617**	**1,145.9617**	**0.3386**		**1,153.0733**

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	8.8873	120.4866	101.6594	0.2176	5.0870	2.1388	7.2259	1.3903	1.9669	3.3572		22,303.7743	22,303.7743	0.2095		22,308.1732
Vendor	0.0548	0.3835	0.6239	6.2000e-004	0.0166	7.0300e-003	0.0237	4.7300e-003	6.4600e-003	0.0112		63.0886	63.0886	7.1000e-004		63.1035
Worker	0.0331	0.0507	0.4741	6.1000e-004	0.0561	5.0000e-004	0.0566	0.0149	4.5000e-004	0.0153		54.2234	54.2234	3.8900e-003		54.3050
Total	**8.9752**	**120.9209**	**102.7574**	**0.2188**	**5.1598**	**2.1464**	**7.3062**	**1.4099**	**1.9738**	**3.3837**		**22,421.0863**	**22,421.0863**	**0.2141**		**22,425.5817**

Heritage Ridge Pre-Construction Export

Santa Barbara-South of Santa Ynez Range County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	16.19	705,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See 1.0, Project Characteristics.

Land Use - User Defined Residential for pre-construction export of stockpiled material.

Construction Phase - See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Trips and VMT - 10,000 one-way haul-truck trips.

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					
2014	11.5666	137.2412	132.7136	0.2295	6.0988	2.8125	8.9113	1.5302	2.5866	4.1168	0.0000	23,512.3103	23,512.3103	0.5550	0.0000	23,523.9649
Total	**11.5666**	**137.2412**	**132.7136**	**0.2295**	**6.0988**	**2.8125**	**8.9113**	**1.5302**	**2.5866**	**4.1168**	**0.0000**	**23,512.3103**	**23,512.3103**	**0.5550**	**0.0000**	**23,523.9649**

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					
2014	11.5666	137.2412	132.7136	0.2295	5.5260	2.8125	8.3385	1.4568	2.5866	4.0434	0.0000	23,512.3103	23,512.3103	0.5550	0.0000	23,523.9649
Total	**11.5666**	**137.2412**	**132.7136**	**0.2295**	**5.5260**	**2.8125**	**8.3385**	**1.4568**	**2.5866**	**4.0434**	**0.0000**	**23,512.3103**	**23,512.3103**	**0.5550**	**0.0000**	**23,523.9649**

	ROG	NOx	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**	**9.39**	**0.00**	**6.43**	**4.79**	**0.00**	**1.78**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	10/1/2014	11/17/2014	5	34	

Acres of Grading (Grading Phase): 16.19

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Crawler Tractors	1	8.00	208	0.43
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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	2	6.00	4.00	10,000.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.9391	0.0000	0.9391	0.1203	0.0000	0.1203			0.0000			0.0000
Off-Road	1.0827	13.3445	5.3133	0.0108		0.6567	0.6567		0.6042	0.6042		1,145.9617	1,145.9617	0.3386		1,153.0733
Total	**1.0827**	**13.3445**	**5.3133**	**0.0108**	**0.9391**	**0.6567**	**1.5958**	**0.1203**	**0.6042**	**0.7244**		**1,145.9617**	**1,145.9617**	**0.3386**		**1,153.0733**

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	10.3786	123.4492	126.0434	0.2175	5.0870	2.1481	7.2351	1.3903	1.9754	3.3657		22,251.0166	22,251.0166	0.2117		22,255.4627
Vendor	0.0686	0.3896	0.8488	6.2000e-004	0.0166	7.1900e-003	0.0238	4.7300e-003	6.6100e-003	0.0113		62.3558	62.3558	7.3000e-004		62.3712
Worker	0.0366	0.0579	0.5081	6.0000e-004	0.0561	5.0000e-004	0.0566	0.0149	4.5000e-004	0.0153		52.9761	52.9761	3.8900e-003		53.0577
Total	**10.4838**	**123.8966**	**127.4003**	**0.2187**	**5.1598**	**2.1558**	**7.3156**	**1.4099**	**1.9825**	**3.3924**		**22,366.3485**	**22,366.3485**	**0.2163**		**22,370.8917**

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					0.3662	0.0000	0.3662	0.0469	0.0000	0.0469			0.0000			0.0000
Off-Road	1.0827	13.3445	5.3133	0.0108		0.6567	0.6567		0.6042	0.6042	0.0000	1,145.9617	1,145.9617	0.3386		1,153.0733
Total	**1.0827**	**13.3445**	**5.3133**	**0.0108**	**0.3662**	**0.6567**	**1.0229**	**0.0469**	**0.6042**	**0.6511**	**0.0000**	**1,145.9617**	**1,145.9617**	**0.3386**		**1,153.0733**

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	10.3786	123.4492	126.0434	0.2175	5.0870	2.1481	7.2351	1.3903	1.9754	3.3657		22,251.0166	22,251.0166	0.2117		22,255.4627
Vendor	0.0686	0.3896	0.8488	6.2000e-004	0.0166	7.1900e-003	0.0238	4.7300e-003	6.6100e-003	0.0113		62.3558	62.3558	7.3000e-004		62.3712
Worker	0.0366	0.0579	0.5081	6.0000e-004	0.0561	5.0000e-004	0.0566	0.0149	4.5000e-004	0.0153		52.9761	52.9761	3.8900e-003		53.0577
Total	**10.4838**	**123.8966**	**127.4003**	**0.2187**	**5.1598**	**2.1558**	**7.3156**	**1.4099**	**1.9825**	**3.3924**		**22,366.3485**	**22,366.3485**	**0.2163**		**22,370.8917**

APPENDIX B

CalEEMod Output

Annual Emissions

Heritage Ridge

Santa Barbara-South of Santa Ynez Range County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	4.75	Acre	4.75	206,910.00	0
City Park	2.00	Acre	2.00	87,120.00	0
Apartments Low Rise	228.00	Dwelling Unit	6.17	218,000.00	620
Apartments Mid Rise	132.00	Dwelling Unit	3.27	120,000.00	145

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2018
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Apartments Low Rise represents workforce housing. Apartments Mid Rise represents senior housing.

Construction Phase - See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Trips and VMT - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Architectural Coating - Residential Interior: 684,450 SF. Residential Exterior: 228,150 SF. Non-Residential Interior: 0 SF. Non-Residential Exterior: Parking Lot 12,415 SF, City Park 5,227 SF (6% of total SF per CalEEMod Appendix E, Revised July 2013).

Construction Off-road Equipment Mitigation - None.

Vehicle Trips - Based on trip rates provided in the North Willow Springs Project Traffic, Circulation, and Parking Study (ATE 2014).

Area Coating - See note under Construction - Architectural Coatings.

Energy Use - CalEEMod default energy factors for Apartments Low Rise used for both Apartments Low Rise (workforce housing) and Apartments Mid Rise (senior housing).

Water And Wastewater - Default values.

Solid Waste - Default values.

Mobile Land Use Mitigation - Increase Density: 22.2 dwelling units/acre. Increase Transit Accessibility, Distance to Transit Station: 0.75 miles. Improve Pedestrian Network: Project Site and Connecting Off-Site. Provide Traffic Calming Measures: 100% Streets with Improvement, 100% Intersections with Improvement. Limit Parking Supply, % Reduction in Spaces: 7.2%.

Area Mitigation - Use Low VOC Paint for residential interior (50 g/L) and exterior (100 g/L).

Energy Mitigation - Exceed Title 24, % Improvement: 25%.

Water Mitigation - Use Water-Efficient Irrigation Systems, % Reduction: 6.1% (default value).

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					
2015	0.3745	3.0424	2.9166	3.6200e-003	0.1089	0.1730	0.2819	0.0266	0.1597	0.1863	0.0000	326.1970	326.1970	0.0624	0.0000	327.5066
2016	4.1044	3.3094	4.1492	5.3700e-003	0.1641	0.2171	0.3812	0.0443	0.2066	0.2509	0.0000	461.4027	461.4027	0.0597	0.0000	462.6555
2017	2.0304	1.5718	1.9890	2.7300e-003	0.0821	0.1004	0.1825	0.0222	0.0954	0.1175	0.0000	230.8991	230.8991	0.0300	0.0000	231.5292
Total	**6.5093**	**7.9236**	**9.0548**	**0.0117**	**0.3551**	**0.4905**	**0.8455**	**0.0931**	**0.4616**	**0.5547**	**0.0000**	**1,018.4988**	**1,018.4988**	**0.1520**	**0.0000**	**1,021.6912**

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					
2015	0.3745	3.0424	2.9166	3.6200e-003	0.0984	0.1730	0.2714	0.0255	0.1596	0.1851	0.0000	326.1967	326.1967	0.0624	0.0000	327.5064
2016	4.1044	3.3094	4.1492	5.3700e-003	0.1641	0.2171	0.3812	0.0443	0.2066	0.2509	0.0000	461.4025	461.4025	0.0597	0.0000	462.6552
2017	2.0304	1.5718	1.9890	2.7300e-003	0.0821	0.1004	0.1825	0.0222	0.0954	0.1175	0.0000	230.8990	230.8990	0.0300	0.0000	231.5290
Total	**6.5093**	**7.9236**	**9.0548**	**0.0117**	**0.3446**	**0.4905**	**0.8351**	**0.0919**	**0.4616**	**0.5536**	**0.0000**	**1,018.4981**	**1,018.4981**	**0.1520**	**0.0000**	**1,021.6906**

	ROG	NOx	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**	**2.95**	**0.00**	**1.24**	**1.21**	**0.00**	**0.20**	**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	tons/yr										MT/yr					
Area	3.1072	0.0313	2.6920	1.4000e-004		0.0147	0.0147		0.0147	0.0147	0.0000	4.3665	4.3665	4.3300e-003	0.0000	4.4574
Energy	0.0214	0.1827	0.0778	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	634.7065	634.7065	0.0235	7.9000e-003	637.6502
Mobile	1.2637	3.2140	14.1255	0.0276	2.0534	0.0372	2.0905	0.5499	0.0342	0.5841	0.0000	2,052.2299	2,052.2299	0.0911	0.0000	2,054.1421
Waste						0.0000	0.0000		0.0000	0.0000	33.6498	0.0000	33.6498	1.9887	0.0000	75.4114
Water						0.0000	0.0000		0.0000	0.0000	8.2986	53.5169	61.8154	0.0310	0.0186	68.2192
Total	**4.3923**	**3.4280**	**16.8953**	**0.0289**	**2.0534**	**0.0666**	**2.1200**	**0.5499**	**0.0637**	**0.6136**	**41.9484**	**2,744.8197**	**2,786.7681**	**2.1386**	**0.0265**	**2,839.8802**

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	2.7106	0.0313	2.6920	1.4000e-004		0.0147	0.0147		0.0147	0.0147	0.0000	4.3665	4.3665	4.3300e-003	0.0000	4.4574
Energy	0.0173	0.1474	0.0627	9.4000e-004		0.0119	0.0119		0.0119	0.0119	0.0000	589.7113	589.7113	0.0225	7.1100e-003	592.3900
Mobile	1.1948	2.8109	12.6497	0.0236	1.7454	0.0321	1.7774	0.4674	0.0295	0.4970	0.0000	1,754.1994	1,754.1994	0.0791	0.0000	1,755.8600
Waste						0.0000	0.0000		0.0000	0.0000	33.6498	0.0000	33.6498	1.9887	0.0000	75.4114
Water						0.0000	0.0000		0.0000	0.0000	8.2986	52.4678	60.7664	0.0308	0.0185	67.1528
Total	**3.9226**	**2.9896**	**15.4044**	**0.0247**	**1.7454**	**0.0587**	**1.8041**	**0.4674**	**0.0562**	**0.5236**	**41.9484**	**2,400.7450**	**2,442.6934**	**2.1254**	**0.0256**	**2,495.2715**

	ROG	NOx	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	**10.69**	**12.79**	**8.82**	**14.61**	**15.00**	**11.93**	**14.90**	**15.00**	**11.85**	**14.67**	**0.00**	**12.54**	**12.35**	**0.62**	**3.17**	**12.13**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2015	1/14/2015	5	10	
2	Grading	Grading	1/15/2015	2/25/2015	5	30	
3	Trenching	Trenching	2/26/2015	5/1/2015	5	47	
4	Building Construction	Building Construction	6/1/2015	6/30/2017	5	545	
5	Architectural Coating	Architectural Coating	1/1/2016	6/30/2017	5	391	
6	Paving	Paving	6/25/2017	6/30/2017	5	5	

Acres of Grading (Site Preparation Phase): 16.19

Acres of Grading (Grading Phase): 16.19

Residential Indoor: 684,450; Residential Outdoor: 228,150; Non-Residential Indoor: 0; Non-Residential Outdoor: 17,642 (Architectural

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Crawler Tractors	2	8.00	208	0.43
Grading	Graders	4	8.00	174	0.41
Trenching	Excavators	3	8.00	162	0.38
Trenching	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Trenching	Trenchers	1	4.00	80	0.50
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Welders	1	4.00	46	0.45
Architectural Coating	Air Compressors	3	6.00	78	0.48
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	3	8.00	80	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	1	24.00	8.00	30.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	14.00	6.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	6	20.00	14.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	6	90.00	60.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	3	18.00	6.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	16.00	2.00	0.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2015

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					8.5800e-003	0.0000	8.5800e-003	9.3000e-004	0.0000	9.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8000e-003	0.0172	0.0121	2.0000e-005		1.3400e-003	1.3400e-003		1.2400e-003	1.2400e-003	0.0000	1.4855	1.4855	4.4000e-004	0.0000	1.4948
Total	**1.8000e-003**	**0.0172**	**0.0121**	**2.0000e-005**	**8.5800e-003**	**1.3400e-003**	**9.9200e-003**	**9.3000e-004**	**1.2400e-003**	**2.1700e-003**	**0.0000**	**1.4855**	**1.4855**	**4.4000e-004**	**0.0000**	**1.4948**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.2000e-004	5.5400e-003	5.3700e-003	1.0000e-005	2.5000e-004	8.0000e-005	3.3000e-004	7.0000e-005	7.0000e-005	1.4000e-004	0.0000	1.0176	1.0176	1.0000e-005	0.0000	1.0178
Vendor	5.3000e-004	3.4300e-003	6.8700e-003	1.0000e-005	1.6000e-004	5.0000e-005	2.1000e-004	5.0000e-005	5.0000e-005	9.0000e-005	0.0000	0.5627	0.5627	1.0000e-005	0.0000	0.5628
Worker	5.9000e-004	1.0000e-003	8.5800e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9347	0.9347	6.0000e-005	0.0000	0.9360
Total	**1.5400e-003**	**9.9700e-003**	**0.0208**	**3.0000e-005**	**1.5100e-003**	**1.4000e-004**	**1.6500e-003**	**4.1000e-004**	**1.3000e-004**	**5.3000e-004**	**0.0000**	**2.5150**	**2.5150**	**8.0000e-005**	**0.0000**	**2.5166**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.3500e-003	0.0000	3.3500e-003	3.6000e-004	0.0000	3.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8000e-003	0.0172	0.0121	2.0000e-005		1.3400e-003	1.3400e-003		1.2400e-003	1.2400e-003	0.0000	1.4855	1.4855	4.4000e-004	0.0000	1.4948
Total	**1.8000e-003**	**0.0172**	**0.0121**	**2.0000e-005**	**3.3500e-003**	**1.3400e-003**	**4.6900e-003**	**3.6000e-004**	**1.2400e-003**	**1.6000e-003**	**0.0000**	**1.4855**	**1.4855**	**4.4000e-004**	**0.0000**	**1.4948**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.2000e-004	5.5400e-003	5.3700e-003	1.0000e-005	2.5000e-004	8.0000e-005	3.3000e-004	7.0000e-005	7.0000e-005	1.4000e-004	0.0000	1.0176	1.0176	1.0000e-005	0.0000	1.0178
Vendor	5.3000e-004	3.4300e-003	6.8700e-003	1.0000e-005	1.6000e-004	5.0000e-005	2.1000e-004	5.0000e-005	5.0000e-005	9.0000e-005	0.0000	0.5627	0.5627	1.0000e-005	0.0000	0.5628
Worker	5.9000e-004	1.0000e-003	8.5800e-003	1.0000e-005	1.1000e-003	1.0000e-005	1.1100e-003	2.9000e-004	1.0000e-005	3.0000e-004	0.0000	0.9347	0.9347	6.0000e-005	0.0000	0.9360
Total	**1.5400e-003**	**9.9700e-003**	**0.0208**	**3.0000e-005**	**1.5100e-003**	**1.4000e-004**	**1.6500e-003**	**4.1000e-004**	**1.3000e-004**	**5.3000e-004**	**0.0000**	**2.5150**	**2.5150**	**8.0000e-005**	**0.0000**	**2.5166**

3.3 Grading - 2015

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					8.5800e-003	0.0000	8.5800e-003	9.3000e-004	0.0000	9.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0851	0.9428	0.3848	6.1000e-004		0.0479	0.0479		0.0440	0.0440	0.0000	57.7841	57.7841	0.0173	0.0000	58.1464
Total	**0.0851**	**0.9428**	**0.3848**	**6.1000e-004**	**8.5800e-003**	**0.0479**	**0.0565**	**9.3000e-004**	**0.0440**	**0.0450**	**0.0000**	**57.7841**	**57.7841**	**0.0173**	**0.0000**	**58.1464**

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	1.1900e-003	7.7300e-003	0.0155	1.0000e-005	3.7000e-004	1.1000e-004	4.8000e-004	1.0000e-004	1.1000e-004	2.1000e-004	0.0000	1.2660	1.2660	1.0000e-005	0.0000	1.2663
Worker	1.0400e-003	1.7400e-003	0.0150	2.0000e-005	1.9200e-003	2.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.3000e-004	0.0000	1.6357	1.6357	1.1000e-004	0.0000	1.6380
Total	**2.2300e-003**	**9.4700e-003**	**0.0305**	**3.0000e-005**	**2.2900e-003**	**1.3000e-004**	**2.4200e-003**	**6.1000e-004**	**1.2000e-004**	**7.4000e-004**	**0.0000**	**2.9017**	**2.9017**	**1.2000e-004**	**0.0000**	**2.9043**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.3500e-003	0.0000	3.3500e-003	3.6000e-004	0.0000	3.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0851	0.9428	0.3848	6.1000e-004		0.0479	0.0479		0.0440	0.0440	0.0000	57.7841	57.7841	0.0173	0.0000	58.1463
Total	**0.0851**	**0.9428**	**0.3848**	**6.1000e-004**	**3.3500e-003**	**0.0479**	**0.0512**	**3.6000e-004**	**0.0440**	**0.0444**	**0.0000**	**57.7841**	**57.7841**	**0.0173**	**0.0000**	**58.1463**

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	1.1900e-003	7.7300e-003	0.0155	1.0000e-005	3.7000e-004	1.1000e-004	4.8000e-004	1.0000e-004	1.1000e-004	2.1000e-004	0.0000	1.2660	1.2660	1.0000e-005	0.0000	1.2663
Worker	1.0400e-003	1.7400e-003	0.0150	2.0000e-005	1.9200e-003	2.0000e-005	1.9400e-003	5.1000e-004	1.0000e-005	5.3000e-004	0.0000	1.6357	1.6357	1.1000e-004	0.0000	1.6380
Total	**2.2300e-003**	**9.4700e-003**	**0.0305**	**3.0000e-005**	**2.2900e-003**	**1.3000e-004**	**2.4200e-003**	**6.1000e-004**	**1.2000e-004**	**7.4000e-004**	**0.0000**	**2.9017**	**2.9017**	**1.2000e-004**	**0.0000**	**2.9043**

3.4 Trenching - 2015

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	0.0531	0.5638	0.3897	5.6000e-004		0.0342	0.0342		0.0315	0.0315	0.0000	53.3705	53.3705	0.0159	0.0000	53.7051
Total	**0.0531**	**0.5638**	**0.3897**	**5.6000e-004**		**0.0342**	**0.0342**		**0.0315**	**0.0315**	**0.0000**	**53.3705**	**53.3705**	**0.0159**	**0.0000**	**53.7051**

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	4.3700e-003	0.0282	0.0565	5.0000e-005	1.3400e-003	4.2000e-004	1.7600e-003	3.8000e-004	3.8000e-004	7.7000e-004	0.0000	4.6280	4.6280	4.0000e-005	0.0000	4.6289
Worker	2.3300e-003	3.9000e-003	0.0336	5.0000e-005	4.3000e-003	4.0000e-005	4.3400e-003	1.1400e-003	3.0000e-005	1.1800e-003	0.0000	3.6608	3.6608	2.5000e-004	0.0000	3.6660
Total	**6.7000e-003**	**0.0321**	**0.0901**	**1.0000e-004**	**5.6400e-003**	**4.6000e-004**	**6.1000e-003**	**1.5200e-003**	**4.1000e-004**	**1.9500e-003**	**0.0000**	**8.2888**	**8.2888**	**2.9000e-004**	**0.0000**	**8.2949**

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	0.0531	0.5638	0.3897	5.6000e-004		0.0342	0.0342		0.0315	0.0315	0.0000	53.3704	53.3704	0.0159	0.0000	53.7050
Total	**0.0531**	**0.5638**	**0.3897**	**5.6000e-004**		**0.0342**	**0.0342**		**0.0315**	**0.0315**	**0.0000**	**53.3704**	**53.3704**	**0.0159**	**0.0000**	**53.7050**

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	4.3700e-003	0.0282	0.0565	5.0000e-005	1.3400e-003	4.2000e-004	1.7600e-003	3.8000e-004	3.8000e-004	7.7000e-004	0.0000	4.6280	4.6280	4.0000e-005	0.0000	4.6289
Worker	2.3300e-003	3.9000e-003	0.0336	5.0000e-005	4.3000e-003	4.0000e-005	4.3400e-003	1.1400e-003	3.0000e-005	1.1800e-003	0.0000	3.6608	3.6608	2.5000e-004	0.0000	3.6660
Total	**6.7000e-003**	**0.0321**	**0.0901**	**1.0000e-004**	**5.6400e-003**	**4.6000e-004**	**6.1000e-003**	**1.5200e-003**	**4.1000e-004**	**1.9500e-003**	**0.0000**	**8.2888**	**8.2888**	**2.9000e-004**	**0.0000**	**8.2949**

3.5 Building Construction - 2015

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	0.1284	1.0130	0.6997	8.7000e-004		0.0825	0.0825		0.0763	0.0763	0.0000	80.8860	80.8860	0.0240	0.0000	81.3889
Total	**0.1284**	**1.0130**	**0.6997**	**8.7000e-004**		**0.0825**	**0.0825**		**0.0763**	**0.0763**	**0.0000**	**80.8860**	**80.8860**	**0.0240**	**0.0000**	**81.3889**

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	0.0613	0.3966	0.7934	7.2000e-004	0.0189	5.8800e-003	0.0247	5.3800e-003	5.4000e-003	0.0108	0.0000	64.9882	64.9882	6.3000e-004	0.0000	65.0014
Worker	0.0344	0.0575	0.4955	6.9000e-004	0.0634	5.3000e-004	0.0639	0.0168	4.8000e-004	0.0173	0.0000	53.9773	53.9773	3.6700e-003	0.0000	54.0543
Total	**0.0957**	**0.4541**	**1.2889**	**1.4100e-003**	**0.0823**	**6.4100e-003**	**0.0887**	**0.0222**	**5.8800e-003**	**0.0281**	**0.0000**	**118.9655**	**118.9655**	**4.3000e-003**	**0.0000**	**119.0557**

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	0.1284	1.0130	0.6997	8.7000e-004		0.0825	0.0825		0.0763	0.0763	0.0000	80.8859	80.8859	0.0240	0.0000	81.3888
Total	**0.1284**	**1.0130**	**0.6997**	**8.7000e-004**		**0.0825**	**0.0825**		**0.0763**	**0.0763**	**0.0000**	**80.8859**	**80.8859**	**0.0240**	**0.0000**	**81.3888**

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	0.0613	0.3966	0.7934	7.2000e-004	0.0189	5.8800e-003	0.0247	5.3800e-003	5.4000e-003	0.0108	0.0000	64.9882	64.9882	6.3000e-004	0.0000	65.0014
Worker	0.0344	0.0575	0.4955	6.9000e-004	0.0634	5.3000e-004	0.0639	0.0168	4.8000e-004	0.0173	0.0000	53.9773	53.9773	3.6700e-003	0.0000	54.0543
Total	**0.0957**	**0.4541**	**1.2889**	**1.4100e-003**	**0.0823**	**6.4100e-003**	**0.0887**	**0.0222**	**5.8800e-003**	**0.0281**	**0.0000**	**118.9655**	**118.9655**	**4.3000e-003**	**0.0000**	**119.0557**

3.5 Building Construction - 2016

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	0.2033	1.6257	1.1740	1.4700e-003		0.1305	0.1305		0.1208	0.1208	0.0000	135.7124	135.7124	0.0402	0.0000	136.5569
Total	**0.2033**	**1.6257**	**1.1740**	**1.4700e-003**		**0.1305**	**0.1305**		**0.1208**	**0.1208**	**0.0000**	**135.7124**	**135.7124**	**0.0402**	**0.0000**	**136.5569**

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	0.0903	0.5931	1.2390	1.2100e-003	0.0320	7.8800e-003	0.0398	9.1200e-003	7.2400e-003	0.0164	0.0000	108.9598	108.9598	9.3000e-004	0.0000	108.9792
Worker	0.0498	0.0855	0.7290	1.1700e-003	0.1075	8.3000e-004	0.1083	0.0286	7.6000e-004	0.0293	0.0000	88.2289	88.2289	5.5300e-003	0.0000	88.3450
Total	**0.1401**	**0.6786**	**1.9680**	**2.3800e-003**	**0.1394**	**8.7100e-003**	**0.1481**	**0.0377**	**8.0000e-003**	**0.0457**	**0.0000**	**197.1887**	**197.1887**	**6.4600e-003**	**0.0000**	**197.3242**

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	0.2033	1.6257	1.1740	1.4700e-003		0.1305	0.1305		0.1208	0.1208	0.0000	135.7123	135.7123	0.0402	0.0000	136.5568
Total	**0.2033**	**1.6257**	**1.1740**	**1.4700e-003**		**0.1305**	**0.1305**		**0.1208**	**0.1208**	**0.0000**	**135.7123**	**135.7123**	**0.0402**	**0.0000**	**136.5568**

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	0.0903	0.5931	1.2390	1.2100e-003	0.0320	7.8800e-003	0.0398	9.1200e-003	7.2400e-003	0.0164	0.0000	108.9598	108.9598	9.3000e-004	0.0000	108.9792
Worker	0.0498	0.0855	0.7290	1.1700e-003	0.1075	8.3000e-004	0.1083	0.0286	7.6000e-004	0.0293	0.0000	88.2289	88.2289	5.5300e-003	0.0000	88.3450
Total	**0.1401**	**0.6786**	**1.9680**	**2.3800e-003**	**0.1394**	**8.7100e-003**	**0.1481**	**0.0377**	**8.0000e-003**	**0.0457**	**0.0000**	**197.1887**	**197.1887**	**6.4600e-003**	**0.0000**	**197.3242**

3.5 Building Construction - 2017

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	0.0935	0.7590	0.5780	7.3000e-004		0.0596	0.0596		0.0551	0.0551	0.0000	66.6013	66.6013	0.0199	0.0000	67.0183
Total	**0.0935**	**0.7590**	**0.5780**	**7.3000e-004**		**0.0596**	**0.0596**		**0.0551**	**0.0551**	**0.0000**	**66.6013**	**66.6013**	**0.0199**	**0.0000**	**67.0183**

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	0.0400	0.2667	0.5757	6.0000e-004	0.0159	3.3200e-003	0.0192	4.5400e-003	3.0500e-003	7.6000e-003	0.0000	53.3946	53.3946	4.3000e-004	0.0000	53.4037
Worker	0.0210	0.0373	0.3132	5.8000e-004	0.0535	3.9000e-004	0.0539	0.0142	3.5000e-004	0.0146	0.0000	42.2369	42.2369	2.4500e-003	0.0000	42.2885
Total	**0.0610**	**0.3041**	**0.8889**	**1.1800e-003**	**0.0694**	**3.7100e-003**	**0.0731**	**0.0188**	**3.4000e-003**	**0.0222**	**0.0000**	**95.6316**	**95.6316**	**2.8800e-003**	**0.0000**	**95.6922**

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	0.0935	0.7590	0.5780	7.3000e-004		0.0596	0.0596		0.0551	0.0551	0.0000	66.6012	66.6012	0.0199	0.0000	67.0182
Total	**0.0935**	**0.7590**	**0.5780**	**7.3000e-004**		**0.0596**	**0.0596**		**0.0551**	**0.0551**	**0.0000**	**66.6012**	**66.6012**	**0.0199**	**0.0000**	**67.0182**

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	0.0400	0.2667	0.5757	6.0000e-004	0.0159	3.3200e-003	0.0192	4.5400e-003	3.0500e-003	7.6000e-003	0.0000	53.3946	53.3946	4.3000e-004	0.0000	53.4037
Worker	0.0210	0.0373	0.3132	5.8000e-004	0.0535	3.9000e-004	0.0539	0.0142	3.5000e-004	0.0146	0.0000	42.2369	42.2369	2.4500e-003	0.0000	42.2885
Total	**0.0610**	**0.3041**	**0.8889**	**1.1800e-003**	**0.0694**	**3.7100e-003**	**0.0731**	**0.0188**	**3.4000e-003**	**0.0222**	**0.0000**	**95.6316**	**95.6316**	**2.8800e-003**	**0.0000**	**95.6922**

3.6 Architectural Coating - 2016

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	3.5977					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1443	0.9287	0.7376	1.1600e-003		0.0770	0.0770		0.0770	0.0770	0.0000	99.9599	99.9599	0.0118	0.0000	100.2074
Total	**3.7419**	**0.9287**	**0.7376**	**1.1600e-003**		**0.0770**	**0.0770**		**0.0770**	**0.0770**	**0.0000**	**99.9599**	**99.9599**	**0.0118**	**0.0000**	**100.2074**

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	9.0300e-003	0.0593	0.1239	1.2000e-004	3.1900e-003	7.9000e-004	3.9800e-003	9.1000e-004	7.2000e-004	1.6400e-003	0.0000	10.8960	10.8960	9.0000e-005	0.0000	10.8979
Worker	9.9700e-003	0.0171	0.1458	2.3000e-004	0.0215	1.7000e-004	0.0217	5.7100e-003	1.5000e-004	5.8600e-003	0.0000	17.6458	17.6458	1.1100e-003	0.0000	17.6690
Total	**0.0190**	**0.0764**	**0.2697**	**3.5000e-004**	**0.0247**	**9.6000e-004**	**0.0256**	**6.6200e-003**	**8.7000e-004**	**7.5000e-003**	**0.0000**	**28.5418**	**28.5418**	**1.2000e-003**	**0.0000**	**28.5669**

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	3.5977					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1443	0.9287	0.7376	1.1600e-003		0.0770	0.0770		0.0770	0.0770	0.0000	99.9598	99.9598	0.0118	0.0000	100.2073
Total	**3.7419**	**0.9287**	**0.7376**	**1.1600e-003**		**0.0770**	**0.0770**		**0.0770**	**0.0770**	**0.0000**	**99.9598**	**99.9598**	**0.0118**	**0.0000**	**100.2073**

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	9.0300e-003	0.0593	0.1239	1.2000e-004	3.1900e-003	7.9000e-004	3.9800e-003	9.1000e-004	7.2000e-004	1.6400e-003	0.0000	10.8960	10.8960	9.0000e-005	0.0000	10.8979
Worker	9.9700e-003	0.0171	0.1458	2.3000e-004	0.0215	1.7000e-004	0.0217	5.7100e-003	1.5000e-004	5.8600e-003	0.0000	17.6458	17.6458	1.1100e-003	0.0000	17.6690
Total	**0.0190**	**0.0764**	**0.2697**	**3.5000e-004**	**0.0247**	**9.6000e-004**	**0.0256**	**6.6200e-003**	**8.7000e-004**	**7.5000e-003**	**0.0000**	**28.5418**	**28.5418**	**1.2000e-003**	**0.0000**	**28.5669**

3.6 Architectural Coating - 2017

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	1.7919					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0648	0.4261	0.3643	5.8000e-004		0.0338	0.0338		0.0338	0.0338	0.0000	49.7885	49.7885	5.2600e-003	0.0000	49.8988
Total	**1.8567**	**0.4261**	**0.3643**	**5.8000e-004**		**0.0338**	**0.0338**		**0.0338**	**0.0338**	**0.0000**	**49.7885**	**49.7885**	**5.2600e-003**	**0.0000**	**49.8988**

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	4.0000e-003	0.0267	0.0576	6.0000e-005	1.5900e-003	3.3000e-004	1.9200e-003	4.5000e-004	3.1000e-004	7.6000e-004	0.0000	5.3395	5.3395	4.0000e-005	0.0000	5.3404
Worker	4.1900e-003	7.4700e-003	0.0626	1.2000e-004	0.0107	8.0000e-005	0.0108	2.8400e-003	7.0000e-005	2.9100e-003	0.0000	8.4474	8.4474	4.9000e-004	0.0000	8.4577
Total	**8.1900e-003**	**0.0341**	**0.1202**	**1.8000e-004**	**0.0123**	**4.1000e-004**	**0.0127**	**3.2900e-003**	**3.8000e-004**	**3.6700e-003**	**0.0000**	**13.7869**	**13.7869**	**5.3000e-004**	**0.0000**	**13.7981**

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	1.7919					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0648	0.4261	0.3643	5.8000e-004		0.0338	0.0338		0.0338	0.0338	0.0000	49.7884	49.7884	5.2600e-003	0.0000	49.8988
Total	**1.8567**	**0.4261**	**0.3643**	**5.8000e-004**		**0.0338**	**0.0338**		**0.0338**	**0.0338**	**0.0000**	**49.7884**	**49.7884**	**5.2600e-003**	**0.0000**	**49.8988**

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	4.0000e-003	0.0267	0.0576	6.0000e-005	1.5900e-003	3.3000e-004	1.9200e-003	4.5000e-004	3.1000e-004	7.6000e-004	0.0000	5.3395	5.3395	4.0000e-005	0.0000	5.3404
Worker	4.1900e-003	7.4700e-003	0.0626	1.2000e-004	0.0107	8.0000e-005	0.0108	2.8400e-003	7.0000e-005	2.9100e-003	0.0000	8.4474	8.4474	4.9000e-004	0.0000	8.4577
Total	**8.1900e-003**	**0.0341**	**0.1202**	**1.8000e-004**	**0.0123**	**4.1000e-004**	**0.0127**	**3.2900e-003**	**3.8000e-004**	**3.6700e-003**	**0.0000**	**13.7869**	**13.7869**	**5.3000e-004**	**0.0000**	**13.7981**

3.7 Paving - 2017

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	4.6500e-003	0.0479	0.0347	5.0000e-005		2.8800e-003	2.8800e-003		2.6500e-003	2.6500e-003	0.0000	4.7337	4.7337	1.4500e-003	0.0000	4.7642
Paving	6.2200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.0479**	**0.0347**	**5.0000e-005**		**2.8800e-003**	**2.8800e-003**		**2.6500e-003**	**2.6500e-003**	**0.0000**	**4.7337**	**4.7337**	**1.4500e-003**	**0.0000**	**4.7642**

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	5.0000e-005	3.4000e-004	7.4000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0685	0.0685	0.0000	0.0000	0.0685
Worker	1.4000e-004	2.6000e-004	2.1400e-003	0.0000	3.7000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.2888	0.2888	2.0000e-005	0.0000	0.2892
Total	**1.9000e-004**	**6.0000e-004**	**2.8800e-003**	**0.0000**	**3.9000e-004**	**0.0000**	**3.9000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3573**	**0.3573**	**2.0000e-005**	**0.0000**	**0.3576**

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	4.6500e-003	0.0479	0.0347	5.0000e-005		2.8800e-003	2.8800e-003		2.6500e-003	2.6500e-003	0.0000	4.7337	4.7337	1.4500e-003	0.0000	4.7642
Paving	6.2200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0109**	**0.0479**	**0.0347**	**5.0000e-005**		**2.8800e-003**	**2.8800e-003**		**2.6500e-003**	**2.6500e-003**	**0.0000**	**4.7337**	**4.7337**	**1.4500e-003**	**0.0000**	**4.7642**

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	5.0000e-005	3.4000e-004	7.4000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0685	0.0685	0.0000	0.0000	0.0685
Worker	1.4000e-004	2.6000e-004	2.1400e-003	0.0000	3.7000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.2888	0.2888	2.0000e-005	0.0000	0.2892
Total	**1.9000e-004**	**6.0000e-004**	**2.8800e-003**	**0.0000**	**3.9000e-004**	**0.0000**	**3.9000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3573**	**0.3573**	**2.0000e-005**	**0.0000**	**0.3576**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Transit Accessibility

Improve Pedestrian Network

Provide Traffic Calming Measures

Limit Parking Supply

	ROG	NOx	CO	SO2	Fugitive 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	1.1948	2.8109	12.6497	0.0236	1.7454	0.0321	1.7774	0.4674	0.0295	0.4970	0.0000	1,754.1994	1,754.1994	0.0791	0.0000	1,755.8600
Unmitigated	1.2637	3.2140	14.1255	0.0276	2.0534	0.0372	2.0905	0.5499	0.0342	0.5841	0.0000	2,052.2299	2,052.2299	0.0911	0.0000	2,054.1421

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	1,516.20	1,516.20	1516.20	4,183,395	3,555,886
Apartments Mid Rise	454.08	454.08	454.08	1,252,866	1,064,936
City Park	3.18	3.18	3.18	5,065	4,305
Parking Lot	0.00	0.00	0.00		
Total	1,973.46	1,973.46	1,973.46	5,441,326	4,625,127

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Low Rise	12.30	5.90	6.40	37.50	15.00	47.50	86	11	3
Apartments Mid Rise	12.30	5.90	6.40	37.50	15.00	47.50	86	11	3
City Park	8.80	4.60	4.60	33.00	48.00	19.00	66	28	6
Parking Lot	8.80	4.60	4.60	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.488429	0.036082	0.211732	0.154985	0.049882	0.007459	0.020077	0.014399	0.001917	0.002182	0.008131	0.001589	0.003135

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive 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	418.9878	418.9878	0.0193	3.9800e-003	420.6275
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	423.0715	423.0715	0.0195	4.0200e-003	424.7272
NaturalGas Mitigated	0.0173	0.1474	0.0627	9.4000e-004		0.0119	0.0119		0.0119	0.0119	0.0000	170.7235	170.7235	3.2700e-003	3.1300e-003	171.7625
NaturalGas Unmitigated	0.0214	0.1827	0.0778	1.1700e-003		0.0148	0.0148		0.0148	0.0148	0.0000	211.6350	211.6350	4.0600e-003	3.8800e-003	212.9230

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	1.45416e+006	7.8400e-003	0.0670	0.0285	4.3000e-004		5.4200e-003	5.4200e-003		5.4200e-003	5.4200e-003	0.0000	77.5995	77.5995	1.4900e-003	1.4200e-003	78.0718
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
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
Apartments Low Rise	2.51173e+006	0.0135	0.1157	0.0493	7.4000e-004		9.3600e-003	9.3600e-003		9.3600e-003	9.3600e-003	0.0000	134.0355	134.0355	2.5700e-003	2.4600e-003	134.8512
Total		**0.0214**	**0.1828**	**0.0778**	**1.1700e-003**		**0.0148**	**0.0148**		**0.0148**	**0.0148**	**0.0000**	**211.6350**	**211.6350**	**4.0600e-003**	**3.8800e-003**	**212.9230**

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					
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
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
Apartments Low Rise	2.02618e+006	0.0109	0.0934	0.0397	6.0000e-004		7.5500e-003	7.5500e-003		7.5500e-003	7.5500e-003	0.0000	108.1249	108.1249	2.0700e-003	1.9800e-003	108.7829
Apartments Mid Rise	1.17305e+006	6.3300e-003	0.0541	0.0230	3.5000e-004		4.3700e-003	4.3700e-003		4.3700e-003	4.3700e-003	0.0000	62.5986	62.5986	1.2000e-003	1.1500e-003	62.9796
Total		**0.0173**	**0.1474**	**0.0627**	**9.5000e-004**		**0.0119**	**0.0119**		**0.0119**	**0.0119**	**0.0000**	**170.7235**	**170.7235**	**3.2700e-003**	**3.1300e-003**	**171.7625**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	821007	234.9452	0.0108	2.2300e-003	235.8646
Apartments Mid Rise	475320	136.0209	6.2500e-003	1.2900e-003	136.5532
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	182081	52.1055	2.4000e-003	5.0000e-004	52.3094
Total		**423.0715**	**0.0195**	**4.0200e-003**	**424.7272**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	811970	232.3588	0.0107	2.2100e-003	233.2681
Apartments Mid Rise	470088	134.5235	6.1800e-003	1.2800e-003	135.0500
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	182081	52.1055	2.4000e-003	5.0000e-004	52.3094
Total		**418.9878**	**0.0193**	**3.9900e-003**	**420.6275**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

	ROG	NOx	CO	SO2	Fugitive 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	2.7106	0.0313	2.6920	1.4000e-004		0.0147	0.0147		0.0147	0.0147	0.0000	4.3665	4.3665	4.3300e-003	0.0000	4.4574
Unmitigated	3.1072	0.0313	2.6920	1.4000e-004		0.0147	0.0147		0.0147	0.0147	0.0000	4.3665	4.3665	4.3300e-003	0.0000	4.4574

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	0.5558					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4684					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	0.0830	0.0313	2.6920	1.4000e-004		0.0147	0.0147		0.0147	0.0147	0.0000	4.3665	4.3665	4.3300e-003	0.0000	4.4574
Total	**3.1072**	**0.0313**	**2.6920**	**1.4000e-004**		**0.0147**	**0.0147**		**0.0147**	**0.0147**	**0.0000**	**4.3665**	**4.3665**	**4.3300e-003**	**0.0000**	**4.4574**

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	0.1592					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.4684					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	0.0830	0.0313	2.6920	1.4000e-004		0.0147	0.0147		0.0147	0.0147	0.0000	4.3665	4.3665	4.3300e-003	0.0000	4.4574
Total	**2.7106**	**0.0313**	**2.6920**	**1.4000e-004**		**0.0147**	**0.0147**		**0.0147**	**0.0147**	**0.0000**	**4.3665**	**4.3665**	**4.3300e-003**	**0.0000**	**4.4574**

7.0 Water Detail

7.1 Mitigation Measures Water

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	60.7664	0.0308	0.0185	67.1528
Unmitigated	61.8154	0.0310	0.0186	68.2192

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	14.8551 / 9.36518	37.6382	0.0196	0.0117	41.6880
Apartments Mid Rise	8.60033 / 5.42195	21.7905	0.0113	6.8000e-003	24.1351
City Park	0 / 2.38296	2.3867	1.1000e-004	2.0000e-005	2.3961
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**61.8154**	**0.0310**	**0.0186**	**68.2192**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	14.8551 / 8.79391	37.0660	0.0195	0.0117	41.1052
Apartments Mid Rise	8.60033 / 5.09121	21.4593	0.0113	6.7800e-003	23.7977
City Park	0 / 2.2376	2.2412	1.0000e-004	2.0000e-005	2.2499
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**60.7664**	**0.0308**	**0.0185**	**67.1528**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	33.6498	1.9887	0.0000	75.4114
Unmitigated	33.6498	1.9887	0.0000	75.4114

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	104.88	21.2897	1.2582	0.0000	47.7116
Apartments Mid Rise	60.72	12.3256	0.7284	0.0000	27.6225
City Park	0.17	0.0345	2.0400e-003	0.0000	0.0773
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**33.6498**	**1.9886**	**0.0000**	**75.4114**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	104.88	21.2897	1.2582	0.0000	47.7116
Apartments Mid Rise	60.72	12.3256	0.7284	0.0000	27.6225
City Park	0.17	0.0345	2.0400e-003	0.0000	0.0773
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**33.6498**	**1.9886**	**0.0000**	**75.4114**

9.0 Operational Offroad

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

10.0 Vegetation

Heritage Ridge Pre-Construction Export

Santa Barbara-South of Santa Ynez Range County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	16.19	705,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See 1.0, Project Characteristics

Land Use - User Defined Residential for pre-construction export of stockpiled material.

Construction Phase - See 3.0, Construction Detail

Off-road Equipment - See 3.0, Construction Detail

Grading - See 3.0, Construction Detail

Trips and VMT - 10,000 one-way haul-truck trips

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					
2014	0.1853	2.3605	2.0849	3.9000e-003	0.1020	0.0477	0.1497	0.0256	0.0439	0.0695	0.0000	363.0897	363.0897	8.5400e-003	0.0000	363.2691
Total	**0.1853**	**2.3605**	**2.0849**	**3.9000e-003**	**0.1020**	**0.0477**	**0.1497**	**0.0256**	**0.0439**	**0.0695**	**0.0000**	**363.0897**	**363.0897**	**8.5400e-003**	**0.0000**	**363.2691**

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					
2014	0.1853	2.3605	2.0849	3.9000e-003	0.0922	0.0477	0.1400	0.0244	0.0439	0.0682	0.0000	363.0897	363.0897	8.5400e-003	0.0000	363.2690
Total	**0.1853**	**2.3605**	**2.0849**	**3.9000e-003**	**0.0922**	**0.0477**	**0.1400**	**0.0244**	**0.0439**	**0.0682**	**0.0000**	**363.0897**	**363.0897**	**8.5400e-003**	**0.0000**	**363.2690**

	ROG	NOx	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**	**9.55**	**0.00**	**6.51**	**4.88**	**0.00**	**1.78**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	10/1/2014	11/17/2014	5	34	

Acres of Grading (Grading Phase): 16.19

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Crawler Tractors	1	8.00	208	0.43
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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	2	6.00	4.00	10,000.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2014

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					0.0160	0.0000	0.0160	2.0400e-003	0.0000	2.0400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0184	0.2269	0.0903	1.8000e-004		0.0112	0.0112		0.0103	0.0103	0.0000	17.6732	17.6732	5.2200e-003	0.0000	17.7829
Total	**0.0184**	**0.2269**	**0.0903**	**1.8000e-004**	**0.0160**	**0.0112**	**0.0271**	**2.0400e-003**	**0.0103**	**0.0123**	**0.0000**	**17.6732**	**17.6732**	**5.2200e-003**	**0.0000**	**17.7829**

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	0.1653	2.1259	1.9734	3.7000e-003	0.0848	0.0364	0.1212	0.0232	0.0335	0.0567	0.0000	343.6302	343.6302	3.2500e-003	0.0000	343.6984
Vendor	1.0600e-003	6.7200e-003	0.0129	1.0000e-005	2.8000e-004	1.2000e-004	4.0000e-004	8.0000e-005	1.1000e-004	1.9000e-004	0.0000	0.9682	0.9682	1.0000e-005	0.0000	0.9685
Worker	5.8000e-004	9.7000e-004	8.3400e-003	1.0000e-005	9.3000e-004	1.0000e-005	9.4000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.8181	0.8181	6.0000e-005	0.0000	0.8194
Total	**0.1669**	**2.1336**	**1.9946**	**3.7200e-003**	**0.0860**	**0.0366**	**0.1226**	**0.0236**	**0.0336**	**0.0572**	**0.0000**	**345.4166**	**345.4166**	**3.3200e-003**	**0.0000**	**345.4862**

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					6.2300e-003	0.0000	6.2300e-003	8.0000e-004	0.0000	8.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0184	0.2269	0.0903	1.8000e-004		0.0112	0.0112		0.0103	0.0103	0.0000	17.6732	17.6732	5.2200e-003	0.0000	17.7828
Total	**0.0184**	**0.2269**	**0.0903**	**1.8000e-004**	**6.2300e-003**	**0.0112**	**0.0174**	**8.0000e-004**	**0.0103**	**0.0111**	**0.0000**	**17.6732**	**17.6732**	**5.2200e-003**	**0.0000**	**17.7828**

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	0.1653	2.1259	1.9734	3.7000e-003	0.0848	0.0364	0.1212	0.0232	0.0335	0.0567	0.0000	343.6302	343.6302	3.2500e-003	0.0000	343.6984
Vendor	1.0600e-003	6.7200e-003	0.0129	1.0000e-005	2.8000e-004	1.2000e-004	4.0000e-004	8.0000e-005	1.1000e-004	1.9000e-004	0.0000	0.9682	0.9682	1.0000e-005	0.0000	0.9685
Worker	5.8000e-004	9.7000e-004	8.3400e-003	1.0000e-005	9.3000e-004	1.0000e-005	9.4000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	0.8181	0.8181	6.0000e-005	0.0000	0.8194
Total	**0.1669**	**2.1336**	**1.9946**	**3.7200e-003**	**0.0860**	**0.0366**	**0.1226**	**0.0236**	**0.0336**	**0.0572**	**0.0000**	**345.4166**	**345.4166**	**3.3200e-003**	**0.0000**	**345.4862**

APPENDIX C

Heritage Ridge Occupant to Unit Ratio Study
The Towbes Group, Inc.
August 6, 2014

HERITAGE RIDGE OCCUPANT/UNIT RATIO ANALYSIS

TGI Senior Housing Sites

Senior Housing	1 Bedroom Units	2 Bedroom Units	Total Number of Occupants*	Total Number of Units	Occupants/Unit Figure
Cypress Meadows (Ventura)	84	20	111	104	**1.07**
Rancho Franciscan (Santa Barbara)	99	12	122	111	**1.10**
Shepard Place (Carpinteria)	120	49	194	169	**1.15**

***Total Number of occupants on 08/06/14 at 100% occupancy at all properties**

AVERAGE SENIOR HOUSING OCCUPANT/UNIT FIGURE **1.11**

DUDEK

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MEMORANDUM

To:	Craig Minus, The Towbes Group Inc.
From:	Jennifer Reed, Dudek
Subject:	Heritage Ridge Project Pre-Construction Export Scenarios Air Quality and Greenhouse Gas Emissions Assessment
Date:	June 26, 2015
cc:	Linda Blackbern, The Towbes Group Inc.
Attachment A:	CalEEMod Output

Dudek is pleased to submit this focused air quality and greenhouse gas (GHG) emissions assessment to assist The Towbes Group Inc. (TGI) with environmental planning requirements for the proposed Heritage Ridge Project (proposed project) located in the City of Goleta, California. This memorandum estimates criteria air pollutants and GHG emissions associated with two pre-construction soil export scenarios, as identified by the City of Goleta (City), and evaluates potential environmental impacts resulting from these two scenarios. This assessment also compares emissions for the two identified pre-construction export scenarios to the estimated emissions and conclusions provided in the *Heritage Ridge Air Quality and GHG Emissions Analysis Technical Report* (2014 Report), prepared by Dudek in September 2014 for the previously identified stockpile export phase.

The contents and organization of this memorandum are as follows: project summary and analysis background, analysis methodology and assumptions, air quality assessment, GHG emissions assessment, conclusions, and references cited.

1 PROJECT SUMMARY AND ANALYSIS BACKGROUND

The proposed project includes development of two housing concepts and a neighborhood park on a 16.2-gross-acre site. Area A would be a housing project for residents ages 62 years and older (senior housing) that would contain 108 one-bedroom units and 24 two-bedroom units in two buildings, for a total of 132 units. Area B would be workforce housing containing 149 one-bedroom units, 55 two-bedroom units, and 24 three-bedroom units, for a total of 228 units in six buildings. The total project unit count would be 360 units (22.2 dwelling units per gross acre) within eight buildings; all units would be rentals. The park area would consist of 2 gross acres.

As discussed above, the proposed project would include pre-construction export of stockpiled soil currently on the site (stockpiled in two locations) prior to building construction.

As previously stated, Dudek prepared the original *Air Quality and GHG Emissions Analysis Technical Report* for the project in 2014. The 2014 Report analyzed project-generated emissions resulting from pre-construction export of the existing stockpiled material on site. Based on information provided by the project's construction team, the 2014 Report assumed that existing soil would be 100,000 cubic yards (CY) and haul trucks were assumed to have a capacity of 20 CY; therefore, total haul truck trips were estimated to be 5,000 round-trips (10,000 one-way haul truck trips). Soil hauling activity was assumed to occur over a 34-day timeframe. Pre-construction export was assumed to occur in October/November 2014. Site preparation for building construction was assumed to commence in January 2015.

Rincon Consultants performed a peer review of the 2014 Report in April 2015, which included a comment regarding the soil export assumptions. Per the peer review comment (discussed in detail below), the City reviewed the analysis assumptions and requested that analysis of the truck export activity be updated to analyze two new scenarios. This memorandum addresses the peer review comment relative to the City's additional analysis request.

The analysis contained herein responds to the following comment from the *Heritage Ridge Project Air Quality and Greenhouse Gas Emissions Analysis Technical Report Peer Review* (Rincon Consultants, April 6, 2015), which outlines the City's request:

> "The Air Quality and Greenhouse Gas Analysis assumes that up to 100,000 CY of soil would need to be exported from the project site prior to construction of the proposed project. The Air Quality and Greenhouse Gas Analysis further assumes that this soil would be removed by haul trucks with a 20 CY capacity over a duration of 34 days. It is our understanding that the City of Goleta has reviewed these assumptions, and found that 115,000 CY of soil removal would be necessary (refer to the civil plans for the project), that soil removal would be more likely to use a mix of hauling vehicles with a capacity between 20 CY and 9 CY, and that the duration of the pre-construction export would be dependent upon the ability of receiver sites to accept the exported soil. The City has requested that analysis of this activity be updated to analyze two scenarios:
>
> - 9 CY trucks at 12 trucks/hour leaving and entering the site between 8 a.m. and 5 p.m. on weekdays (12,778 total round truck trips, or 96 round trips per day over a period of 27 weeks).

- 20 CY trucks at 6 trucks/hour leaving and entering the site between 8 a.m. and 5 p.m. on weekdays (5,750 total round truck trips, or 48 round trips per day over a period of 24 weeks).

In addition, the Air Quality and Greenhouse Gas Analysis assumes that this soil hauling activity would occur over a total duration of 34 days. As shown in the above scenarios, the proposed soil hauling activity does not appear to be feasible within the assumed 34-day timeframe. The number of trucks that would be needed per day, as well as the incoming truck and soil amount limitations at receiver site(s), would increase the time frame at least by the number of weeks shown in the above scenarios. To facilitate California Environmental Quality Act (CEQA) analysis, the Air Quality and Greenhouse Gas Analysis needs to be revised to reflect the hauling scenarios shown above.

Finally, it should be noted that Appendix B of the Air Quality and Greenhouse Gas Analysis indicates that the analysis of pre-construction soil hauling emissions estimated that six employee trips would be required for this activity. Rincon agrees that this assumption remains reasonable and appropriate for the analysis under both scenarios described above. Therefore, no changes are required to the assumption for employee trips during the pre-construction soil hauling activity."

This Air Quality and GHG Emissions Assessment Memorandum estimates criteria air pollutant and GHG emissions for the following two pre-construction export scenarios:

1. Revised Pre-Construction Export Scenario 1: Total of 25,556 one-way haul truck trips (12,778 round truck trips) assuming a truck capacity of 9 CY over a 27-week export phase.
2. Revised Pre-Construction Export Scenario 2: Total of 11,500 one-way haul truck trips (5,750 round truck trips) assuming a truck capacity of 20 CY over a 24-week export phase.

The revised export scenarios would not result in changes to the operational characteristics of the proposed project. As such, operational emissions are not evaluated in this memorandum.

2 ANALYSIS METHODOLOGY AND ASSUMPTIONS

2.1 Overview of Criteria Air Pollutants and Greenhouse Gases

The proposed project site is located within the South Central Coast Air Basin, which includes Ventura County, Santa Barbara County, and San Luis Obispo County, and is within the jurisdictional boundaries of the Santa Barbara County Air Pollution Control District (SBCAPCD). Project-generated air pollutant and GHG emissions were estimated using the most recent version of the California Emissions Estimator Model (CalEEMod),[1] consistent with the SBCAPCD recommendations for project-level review because CalEEMod uses current emissions factors and updated default values, and has the ability to quantify indirect GHG emissions and GHG mitigation (SBCAPCD 2015a).

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 that are evaluated include reactive organic compounds (ROCs; also referred to as volatile organic compounds (VOCs)), oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), particulate matter with an aerodynamic diameter less than or equal to 10 microns in size (PM_{10}), and particulate matter with an aerodynamic diameter less than or equal to 2.5 microns in size ($PM_{2.5}$). ROCs and NO_x are important because they are precursors to ozone (O_3).

GHGs are gases that absorb infrared radiation in the atmosphere. The greenhouse effect is a natural process that contributes to regulating the Earth's temperature. Global climate change concerns are focused on whether human activities are leading to an enhancement of the greenhouse effect. Principal GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), O_3, and water vapor. If the atmospheric concentrations of GHGs rise, the average temperature of the lower atmosphere will gradually increase. Globally, climate change has the potential to impact numerous environmental resources through uncertain impacts related to future air temperatures and precipitation patterns. Although climate change is driven by global atmospheric conditions, climate change impacts are felt locally. Climate change is already affecting California: average temperatures 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).

[1] CalEEMod Version 2013.2.2, available online (http://www.caleemod.com).

The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP), which varies among GHGs. Total GHG emissions are expressed as a function of how much warming would be caused by the same mass of CO_2. Thus, GHG emissions are typically measured in terms of pounds or tons of CO_2 equivalent (CO_2E).[2]

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 (SBCAPCD 2015a). This approach is consistent with the *Final Statement of Reasons for Regulatory Action* for amendments to the CEQA Guidelines, which confirms that an environmental impact report or other environmental document must analyze the incremental contribution of a project to GHG levels and determine whether those emissions are cumulatively considerable (CNRA 2009).

Criteria air pollutant emissions and GHG emissions associated with the pre-construction export scenarios for the proposed project were estimated for the following emissions sources: operation of off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles.

2.2 2014 Report Pre-Construction Export Assumptions

The 2014 Report assumed that the proposed project would include pre-construction export of the existing stockpiled material on site, which was anticipated to occur in October and November 2014. Existing soil is currently stockpiled in two locations on the site and is estimated to be 100,000 CY of soil. Haul trucks were assumed to have a capacity of 20 CY, and total haul truck trips were estimated to be 5,000 round-trips (10,000 one-way haul truck trips). This activity was also assumed to require three workers on site to load material and two trucks driven to the site daily.

[2] The CO_2E for a gas is derived by multiplying the mass of the gas by the associated GWP, such that metric tons of CO_2E = (metric tons of a GHG) × (GWP of the GHG). CalEEMod assumes that the GWP for CH_4 is 21, which means that emissions of 1 metric ton of CH_4 are equivalent to emissions of 21 metric tons of CO_2, and the GWP for N_2O is 310, based on the Intergovernmental Panel on Climate Change (IPCC) Second Assessment Report. Although the IPCC has released subsequent Assessment Reports with updated GWPs, California Air Resources Board (CARB) reporting and other statewide documents use the GWP in the IPCC Second Assessment Report. As such, it is appropriate to use the hardwired GWP values in CalEEMod from the IPCC Second Assessment Report.

Table 1, 2014 Report Pre-Construction Export Scenario Assumptions, presents the phase duration, truck and worker vehicle trips, and equipment assumptions used for estimating the pre-construction export emissions of the proposed project in the 2014 Report.

Table 1
2014 Report Pre-Construction Export Scenario Assumptions

Construction Phase	Phase Duration (Days)	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total Haul Truck Trips	Equipment		
					Type	*Quantity*	*Usage Hours*
Pre-Construction Export	34	6	4	10,000	Crawler Tractors	1	8
					Tractors/Loaders/Backhoes	1	8

Source: Dudek 2014
Notes: Workers were assumed to result in two one-way trips per day (three workers would generate six trips per day). Vender trucks were assumed to result in two one-way trips each per day (two vendor trucks would generate four trips per day). Haul trucks were assumed to result in two one-way trips per truck (5,000 haul trucks would generate a total of 10,000 trips).
Haul trucks were assumed to be heavy-heavy-duty trucks with a capacity of 20 CY.

2.3 Revised Pre-Construction Export Scenario Analysis Assumptions

The revised pre-construction export scenarios both assume that 115,000 CY of soil would be removed from the site, which is 15,000 CY greater than what was assumed in the 2014 Report. The first revised scenario assumes soil would be exported using trucks with a capacity that is 11 CY less than the 2014 Report, which would thus require more total truck trips and a longer phase duration. The second revised scenario assumes that soil export would be accomplished by trucks with the same capacity as the 2014 Report, but a greater volume of soil would need to be exported, resulting in a greater total of truck trips and a longer phase duration.

The assumptions used in CalEEMod to estimate emissions for the revised scenarios are presented below.

2.3.1 Revised Pre-Construction Export Scenario 1 (9 CY Trucks) Assumptions

Phase duration, truck and worker vehicle trips, and equipment assumptions used for estimating the pre-construction export emissions of the Revised Export Scenario 1 is presented in Table 2, Revised Pre-Construction Export Scenario 1 (9 CY Trucks) Assumptions. Haul trucks with a 9 CY capacity were assumed to be medium-heavy-duty trucks with three axles (Schell, pers. comm., 2015).

Table 2
Revised Pre-Construction Export Scenario 1 (9 CY Trucks) Assumptions

Construction Phase	Phase Duration (Days)	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total Haul Truck Trips	Equipment		
					Type	*Quantity*	*Usage Hours*
Pre-Construction Export	135	6	4	25,556	Crawler Tractors	1	8
					Tractors/Loaders/Backhoes	1	8

Notes: Worker trips were assumed to result in two one-way trips per day (three workers would generate six trips per day). Vender trucks were assumed to result in two one-way trips each per day (two vendor trucks would generate four trips per day). Haul trucks were assumed to result in two one-way trips per truck (12,778 haul trucks would generate a total of 25,556 trips).
Haul trucks were assumed to be medium-heavy-duty trucks with a capacity of 9 CY.

2.3.2 Revised Pre-Construction Export Scenario 2 (20 CY Trucks) Assumptions

Phase duration, truck and worker vehicle trips, and equipment assumptions used for estimating the pre-construction export emissions of the Revised Export Scenario 2 is presented in Table 3, Revised Pre-Construction Export Scenario 2 (20 CY Trucks) Assumptions. Haul trucks with a 20 CY capacity were assumed to be heavy-heavy-duty trucks with four axles.

Table 3
Revised Pre-construction Export Scenario 2 (20 CY Trucks) Assumptions

Construction Phase	Phase Duration (Days)	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total Haul Truck Trips	Equipment		
					Type	*Quantity*	*Usage Hours*
Pre-Construction Export	120	6	4	11,500	Crawler Tractors	1	8
					Tractors/Loaders/Backhoes	1	8

Notes: Worker trips were assumed to result in two one-way trips per day (three workers would generate six trips per day). Vender trucks were assumed to result in two one-way trips each per day (two vendor trucks would generate four trips per day). Haul trucks were assumed to result in two one-way trips per truck (5,750 haul trucks would generate a total of 11,500 trips).
Haul trucks were assumed to be heavy-heavy-duty trucks with a capacity of 20 CY.

3 AIR QUALITY ASSESSMENT

3.1 Thresholds of Significance

California developed guidelines to address the significance of air quality impacts based on Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), which provides guidance to determine if a project would have a significant environmental impact. The following threshold from Appendix G of the CEQA Guidelines is addressed in this assessment:

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

In addition, Appendix G of the CEQA Guidelines indicates that, where available, the significance criteria established by the applicable air district may be relied on to determine whether a project would have a significant impact on air quality. The SBCAPCD has criteria and thresholds for determining significance under CEQA; however, the SBCAPCD does not currently have quantitative thresholds of significance in place for short-term construction emissions. The SBCAPCD uses 25 tons per year for ROC or NO_x as a guideline for determining the significance of construction impacts, which is used in this analysis to determine if the proposed project would result in impacts to air quality associated with its potential to violate any air quality standard or contribute substantially to an existing or projected air quality violation.

The following thresholds are not addressed within this analysis because implementation of the revised pre-construction export Scenarios 1 and 2 would not result in an increase in the level of impact from those levels identified in the 2014 Report. Potential proposed project impacts would remain less than significant.

Appendix G of the CEQA Guidelines thresholds not addressed herein:

- Conflict with or obstruct the implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for O_3 precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

In addition, SBCAPCD's *Scope and Content of Air Quality Sections in Environmental Documents* thresholds are not addressed herein (SBCAPCD 2015a):

- Emit (from all project sources, both stationary and mobile) more than the daily trigger for offsets or Air Quality Impact Analysis set in the SBCAPCD New Source Review Rule,[3] for any pollutant (i.e., 240 pounds per day for ROC or NO_x, and 80 pounds per day for PM_{10});
- Emit 25 pounds per day or more of NO_x or ROC from motor vehicle trips only;
- Cause or contribute to a violation of any California or National Ambient Air Quality Standard (except O_3);
- Exceed the SBCAPCD health risk public notification thresholds adopted by the SBCAPCD Board for non-cancer risk; or
- Be inconsistent with the latest adopted federal and state air quality plans for Santa Barbara County.

Also, the following City's *Environmental Thresholds and Guidelines Manual* thresholds are not addressed herein (City of Goleta 2002):

- Interferes with progress toward the attainment of the O_3 standard by releasing emissions which equal or exceed the established long-term quantitative thresholds for NO_x and ROG; or
- Equals or exceeds the state or federal ambient air quality standards for any criteria pollutant (as determined by modeling).

The potential for the revised export scenarios to result in CO hotspot impacts is also not addressed herein, as the export scenarios are not anticipated to generate a substantial amount of traffic (800 peak-hour trips) that would impact intersections operating at an unacceptable level of service.

The City does not specify quantitative thresholds of significance for short-term construction emissions because construction emissions from land development projects are assumed to have already been accounted for in the SBCAPCD's Clean Air Plan (City of Goleta 2006). However, because the region does not meet the state standards for O_3 and PM_{10}, the City requires

[3] The SBCAPCD New Source Review Rule as it existed at the time the SBCAPCD Environmental Review Guidelines were adopted in October 1995 and were subsequently revised in April 2015 (SBCAPCD 2015b).

implementation of standard emissions and dust control techniques for all construction, as outlined in General Plan (GP)/Coastal Land Use Plan (CLUP) Policy CE 12.3 and listed as mitigation measures in the City's GP/CLUP Final Environmental Impact Report (FEIR) (Air Quality) (City of Goleta 2006) to ensure that these emissions remain less than significant.

3.2 Impact Analysis

Construction of the proposed project would result in a temporary addition of pollutants to the local airshed caused by soil disturbance, dust emissions, and combustion pollutants from on-site construction equipment, as well as from off-site trucks hauling construction materials. 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 emissions levels can only be approximately estimated with a corresponding uncertainty in precise ambient air quality impacts.

Pollutant emissions associated with construction activity were quantified using CalEEMod. Default values provided by CalEEMod were used where detailed project information was not available. A detailed depiction of the construction schedule—including information regarding equipment, haul trucks, vendor trucks, and worker vehicles—is included in Section 2.3, Revised Pre-Construction Export Scenario Analysis Assumptions, of this memorandum.

Export of stockpiled material would generate construction-related air pollutant emissions from two general activity categories: entrained dust, and equipment and vehicle exhaust emissions. 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. To account for dust-control measures in the calculations, it was assumed that the active sites would be watered at least three times daily, resulting in an approximately 61% reduction, to represent compliance with SBCAPCD standard dust control measures. Because Santa Barbara County is currently in nonattainment for the state PM_{10} standard, standard dust control measures are required for all discretionary construction activities (regardless of the significance of the fugitive dust impacts), based on policies in the 1979 Air Quality Attainment Plan (SBCAPCD 2015a). Exhaust from internal combustion engines used by construction equipment, hauling trucks (dump trucks), vendor trucks (delivery trucks), and worker vehicles would result in emissions of ROC, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$.

Emissions estimated for pre-construction export of stockpiled soil currently on the site as presented in the 2014 Report and as calculated herein for the two revised pre-construction export scenarios are provided below.

2014 Report Analysis

Table 4, 2014 Report Pre-Construction Export Estimated Maximum Daily Construction Criteria Air Pollutant Emissions, shows the estimated maximum unmitigated daily summer and winter construction emissions associated with export of existing stockpiled material as analyzed in the 2014 Report.

Table 4
2014 Report Pre-Construction Export Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Year	ROC (pounds/day)	NO_x (pounds/day)	CO (pounds/day)	SO_x (pounds/day)	PM_{10} (pounds/day)	$PM_{2.5}$ (pounds/day)
Summer						
2014	10.06	134.27	108.07	0.23	8.33	4.03
Winter						
2014	11.57	137.24	132.71	0.23	8.34	4.04

Source: Dudek 2014
Estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

Table 5, 2014 Report Pre-Construction Export Estimated Annual Construction Criteria Air Pollutant Emissions, presents estimated annual construction emissions from 10,000 one-way haul truck trips, worker trips, and operation of on-site equipment in 2014.

Table 5
2014 Report Pre-Construction Export Estimated Annual Construction Criteria Air Pollutant Emissions

Year	ROC (tons/year)	NO_x (tons/year)	CO (tons/year)	SO_x (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)
2014	0.19	2.36	2.08	0.00	0.15	0.07
SBCAPCD Guideline	*25*	*25*	—	—	—	—
Guideline Exceeded?	No	No				

Source: Dudek 2014
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

As shown in Table 5, annual emissions resulting from pre-construction export activities for the proposed project during 2014 as estimated in the 2014 Report would not exceed the SBCAPCD's general rule of 25 tons per year of ROC or NO_x used for determining significance of construction exhaust emissions.

The 2014 Report also estimated the annual emissions of proposed project construction following pre-construction export, which was assumed to occur over 3 years. Table 6, 2014 Report Estimated Annual Construction Criteria Air Pollutant Emissions, presents estimated annual construction emissions in 2015, 2016, and 2017.

Table 6
2014 Report Estimated Annual Construction Criteria Air Pollutant Emissions

Year	ROC (tons/year)	NO_x (tons/year)	CO (tons/year)	SO_x (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)
2015	0.38	3.04	2.92	0.00	0.27	0.19
2016	4.10	3.31	4.15	0.01	0.38	0.25
2017	2.03	1.57	1.99	0.00	0.18	0.12
Maximum Annual Total	**4.10**	**3.31**	**4.15**	**0.01**	**0.38**	**0.25**
SBCAPCD Guideline	*25*	*25*	—	—	—	—
Guideline Exceeded?	No	No				

Source: Dudek 2014
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

As shown in Table 6, maximum annual emissions resulting from proposed project construction during 2015, 2016, or 2017 would not exceed the SBCAPCD's general rule of 25 tons per year of ROC or NO_x used for determining significance of construction exhaust emissions.

Therefore, impacts on air quality during pre-construction export and construction activities were determined to be less than significant.

Revised Pre-Construction Export Scenario 1 (9 CY Trucks)

Table 7, Revised Pre-Construction Export Scenario 1 (9 CY Trucks) Estimated Maximum Daily Construction Criteria Air Pollutant Emissions, shows the estimated maximum unmitigated daily summer and winter construction emissions associated with export of existing stockpiled material under Scenario 1.

Table 7
Revised Pre-Construction Export Scenario 1 (9 CY Trucks) Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Year	ROC (pounds/day)	NO_x (pounds/day)	CO (pounds/day)	SO_x (pounds/day)	PM_{10} (pounds/day)	$PM_{2.5}$ (pounds/day)
Summer						
2015	4.41	53.64	31.37	0.10	5.45	2.55
Winter						
2015	4.71	54.50	36.89	0.10	5.45	2.56

See Attachment A for detailed results.
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

Table 8, Revised Pre-Construction Export Scenario 1 (9 CY Trucks) Estimated Annual Construction Criteria Air Pollutant Emissions, presents estimated annual construction emissions from 25,556 one-way haul truck trips, worker trips, and operation of on-site equipment in 2015.

Table 8
Revised Pre-Construction Export Scenario 1 (9 CY Trucks) Estimated Annual Construction Criteria Air Pollutant Emissions

Year	ROC (tons/year)	NO_x (tons/year)	CO (tons/year)	SO_x (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)
2015	0.31	3.72	2.34	0.00	0.36	0.17
SBCAPCD Guideline	*25*	*25*	—	—	—	—
Guideline Exceeded?	No	No				

See Attachment A for detailed results.
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

As shown in Table 8, emissions resulting from pre-construction export for the revised Scenario 1, assuming export using 9 CY trucks, would not exceed the SBCAPCD's general rule of 25 tons per year of ROC or NO_x used for determining significance of construction exhaust emissions during 2015. Therefore, impacts on air quality during pre-construction export of Scenario 1 would be less than significant.

Revised Pre-Construction Export Scenario 2 (20 CY Trucks)

Table 9, Revised Pre-Construction Export Scenario 2 (20 CY Trucks) Estimated Maximum Daily Construction Criteria Air Pollutant Emissions, shows the estimated maximum unmitigated daily summer and winter construction emissions associated with export of existing stockpiled material under Scenario 2.

Table 9
Revised Pre-Construction Export Scenario 2 (20 CY Trucks) Estimated Maximum Daily Construction Criteria Air Pollutant Emissions

Year	ROC (pounds/day)	NO_x (pounds/day)	CO (pounds/day)	SO_x (pounds/day)	PM_{10} (pounds/day)	$PM_{2.5}$ (pounds/day)
Summer						
2015	3.63	47.57	36.02	0.08	3.00	1.55
Winter						
2015	4.04	48.43	44.01	0.08	3.00	1.56

See Attachment A for detailed results.
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

Table 10, Revised Pre-Construction Export Scenario 2 (20 CY Trucks) Estimated Annual Construction Criteria Air Pollutant Emissions, presents estimated annual construction emissions from 11,500 one-way haul truck trips, worker trips, and operation of on-site equipment in 2015.

Table 10
Revised Pre-Construction Export Scenario 2 (20 CY Trucks) Estimated Annual Construction Criteria Air Pollutant Emissions

Year	ROC (tons/year)	NO_x (tons/year)	CO (tons/year)	SO_x (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)
2015	0.23	2.93	2.44	0.00	0.19	0.09
SBCAPCD Guideline	*25*	*25*	—	—	—	—
Guideline Exceeded?	No	No				

See Attachment A for detailed results.
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

As shown in Table 10, emissions resulting from pre-construction export during 2015 for the revised Scenario 2 assuming export using 20 CY trucks would not exceed the SBCAPCD's general rule of 25 tons per year of ROC or NO_x used for determining significance of construction exhaust emissions. Therefore, impacts on air quality during pre-construction export under Scenario 2 would be less than significant.

Combined Pre-Construction Export and 2014 Report Project Construction Emissions

The pre-construction and construction schedule used to estimate emissions in the 2014 Report assumed that pre-construction export would occur in 2014 and building construction activities (starting with site preparation and grading) would commence in 2015. This memorandum analysis assumes that pre-construction export for both scenarios would occur

in 2015 or a future year. As such, pre-construction export could occur within the same year that proposed project grading or other construction activities would occur. To provide a maximum (worst-case) analysis, the annual export emissions under Scenario 1 and Scenario 2 were added to the maximum annual proposed project construction emissions estimated in the 2014 Report to illustrate the maximum annual emissions resulting from short-term proposed project emissions. As presented in Table 6, 2014 Report Estimated Annual Construction Criteria Air Pollutant Emissions, maximum annual emissions during proposed project construction would occur during 2016 for all criteria air pollutants.

Table 11, Combined Project Construction and Pre-Construction Export Estimated Annual Construction Criteria Air Pollutant Emissions, presents the maximum annual construction emissions, assuming pre-construction export under Scenarios 1 and 2 would occur during the same year that the project would generate maximum annual emissions.

Table 11
Combined Project Construction and Pre-Construction Export Estimated Annual Construction Criteria Air Pollutant Emissions

Year	ROC (tons/year)	NO_x (tons/year)	CO (tons/year)	SO_x (tons/year)	PM_{10} (tons/year)	$PM_{2.5}$ (tons/year)
Revised Pre-Construction Export Scenario 1						
Scenario 1 Annual Emissions	0.31	3.72	2.34	0.00	0.36	0.17
2014 Report Maximum Annual Construction Emissions	4.10	3.31	4.15	0.01	0.38	0.25
Maximum Annual Total	**4.41**	**7.03**	**6.49**	**0.01**	**0.74**	**0.42**
SBCAPCD Guideline	*25*	*25*	—	—	—	—
Guideline Exceeded?	No	No				
Revised Pre-Construction Export Scenario 2						
Scenario 2 Annual Emissions	0.23	2.93	2.44	0.00	0.19	0.09
2014 Report Maximum Annual Construction Emissions	4.10	3.31	4.15	0.01	0.38	0.25
Maximum Annual Total	**4.33**	**6.24**	**6.59**	**0.01**	**0.57**	**0.34**
SBCAPCD Guideline	*25*	*25*	—	—	—	—
Guideline Exceeded?	No	No				

See Attachment A for detailed results.
These estimates reflect compliance with SBCAPCD standard dust control measures, resulting in a 61% reduction of on-site fugitive dust.

As shown in Table 11, the pre-construction export for the revised Scenario 1 and Scenario 2, in combination with the maximum annual emissions for the proposed project as estimated in the 2014 Report, would not exceed the SBCAPCD's general rule of 25 tons per year of ROC or NO_x used for determining significance of construction exhaust emissions. Therefore, impacts on air quality during pre-construction export and the project's potential to violate any air quality standard or contribute substantially to an existing or projected air quality violation would remain less than significant.

Because Santa Barbara County is currently in nonattainment for the state PM_{10} standard, dust mitigation measures are required for all discretionary construction activities, regardless of the significance of the fugitive dust impacts, based on policies within the 1979 Air Quality Attainment Plan. These measures are required for all projects involving earthmoving activities, regardless of the project size or duration. Proper implementation of these measures is assumed to fully mitigate fugitive dust emissions. Fugitive dust mitigation measures included in the 2014 Report (Mitigation Measure 1) would be required for the revised export activities under Scenario 1 and Scenario 2.

4 GREENHOUSE GAS EMISSIONS ASSESSMENT

4.1 Thresholds of Significance

The state of California developed guidelines to address the significance of GHG emissions impacts based on Appendix G of the CEQA Guidelines (14 CCR 15000 et seq.), which provides guidance to determine if a project would have a significant environmental impact. The following CEQA Guidelines Appendix G threshold is addressed in this assessment:

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

The following threshold is not addressed within this analysis because implementation of the revised pre-construction export under Scenarios 1 and 2 would not result in an increase in the level of impact from those level identified in the 2014 Report, and potential project impacts would remain less than significant.

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

Consistent with the 2014 Report, this analysis uses the quantitative Bay Area Air Quality Management District's (BAAQMD) thresholds for GHG emissions, as recommended by City staff for as guidance for City project-level projects. To determine if the revised pre-construction export scenarios, in combination with the proposed project emissions, would generate GHG

emissions that may have a significant impact on the environment, this analysis applies the BAAQMD/County of Santa Barbara Interim Thresholds of Significance for operational GHG emissions for projects other than stationary sources, where any of these criteria can be used to evaluate the proposed project's GHG emissions (BAAQMD 2010):

- 1,100 metric tons (MT) of CO_2E per year;
- 4.6 MT CO_2E per service population (SP) per year (SP = residents + employees); or
- Compliance with a Qualified Climate Action Plan.

The per-service population guideline is intended to avoid penalizing large projects that incorporate GHG-reduction measures such that they may have high total annual GHG emissions, but would be relatively efficient compared to projects of similar scale. Consistent with the BAAQMD's CEQA Air Quality Guidelines, construction emissions associated with the proposed project (e.g., those from off-road equipment, worker vehicles) would be estimated and reported; however, the GHG threshold applies only to operational emissions (BAAQMD 2010). Although the BAAQMD guidance does not indicate that the short-term GHG emissions from the construction phase should be included in the emissions compared to the established threshold, it is common practice for GHG analyses performed for proposed projects in the City to amortize construction emissions over the life of the project, which is typically assumed to be 30 years, and add those emissions to the estimated annual operational emissions.

To determine potential project-generated GHG impacts, the 2014 Report analysis used the BAAQMD efficiency metric threshold of 4.6 MT CO2E per SP per year. This memorandum updates the operational analysis presented in the 2014 Report to reflect amortized construction emissions from the revised export scenarios.

4.2 Impact Analysis

Pre-construction export and project construction 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. GHG emissions associated with temporary construction activities were quantified using CalEEMod. A detailed depiction of the construction schedule—including information regarding phasing, equipment used during each phase, haul trucks, vendor trucks, and worker vehicles—is included in Section 2, Analysis Methodology and Assumptions, of this memorandum. On-site sources of GHG emissions include off-road equipment; off-site sources include hauling and vendor trucks and worker vehicles. Emissions from on-site and off-site sources are combined for the purposes of this analysis; a breakdown of emissions by source is provided in Attachment A.

2014 Report Analysis

Table 12, 2014 Report Estimated Annual Construction Greenhouse Gas Emissions, presents construction GHG emissions for the proposed project in 2015, 2016, and 2017 from on-site and off-site emissions sources, and GHG emissions resulting from pre-construction export of existing stockpiled soil in 2014.

Table 12
2014 Report Estimated Annual Construction Greenhouse Gas Emissions

Year	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
Proposed Project Construction Emissions				
2015	326	0.06	0.00	328
2016	461	0.06	0.00	463
2017	231	0.03	0.00	232
Subtotal	*1,018*	*0.15*	*0.00*	*1,023*
Pre-Construction Export Emissions				
2014	363	0.01	0.00	363
Combined Total	**1,381**	**0.16**	**0.00**	**1,386**

Source: Dudek 2014
MT = metric tons; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2E = carbon dioxide equivalent

As shown in Table 12, GHG emissions generated during project construction were estimate to be approximately 328 MT CO_2E in 2015, 463 MT CO_2E in 2016, and 232 MT CO_2E in 2017, for a total of 1,023 MT CO_2E. With the addition of 363 MT CO_2E resulting from pre-construction export emissions in 2014 assuming 10,000 one-way haul truck trips, the combined total is estimated to be 1,386 MTCO_2E.

Because there is no separate GHG threshold for construction, the evaluation of significance was included in the operational emissions analysis.

The estimated operational project-generated GHG emissions, considering the project design features, from area sources (landscape maintenance), energy usage, motor vehicles, solid waste generation, water supply, and wastewater treatment in 2018 (i.e., first full year of project operation) are shown in Table 13, 2014 Report Estimated Annual Operational Greenhouse Gas Emissions. See the 2014 Report for a detailed description of the assumed project design features.

Table 13
2014 Report Estimated Annual Operational Greenhouse Gas Emissions

	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
Area Sources and Energy	594	0.03	0.01	597
Mobile Sources	1,754	0.08	0.00	1,756
Solid Waste	34	1.99	0.00	75
Water Supply and Wastewater	61	0.03	0.02	67
Total	**2,443**	**2.14**	**0.03**	**2,495**
Amortized Construction Emissions				46
Operation + Amortized Construction Total				**2,541**

Source: Dudek 2014
MT = metric tons; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2E = carbon dioxide equivalent
Emissions shown represent proposed project operations with incorporation of project features.

As shown in Table 13, annual project-generated GHG emissions in 2018 were estimated to be approximately 2,495 MT CO_2E per year as a result of project operations. Estimated annual project-generated emissions in 2018 from area and energy sources, mobile sources, and amortized project construction emissions would be approximately 2,541 MT CO_2E per year, as detailed in the 2014 Report.

The service population represents total residents and employees. It was assumed in the 2014 Report that the service population for the workforce housing would be 620 persons based on the assumption of 2.72 persons per dwelling unit. The service population for the senior housing was assumed to be 145 persons, based on the assumption of 1.11 persons per dwelling unit. The proposed residential development would not generate substantial new employment, and potential employees associated with the rental office were not included in this analysis to provide a conservative population estimate. The total service population for the proposed project is estimated to be 765 persons.

Estimated proposed project emissions, assuming incorporation of proposed sustainable design measures with quantifiable reductions (2,541 MT CO_2E per year), when divided by the service population (765 persons), would be 3.32 MT CO_2E per service population per year. Estimated annual project-generated emissions in 2018 from area and energy sources, mobile sources, and amortized project construction emissions would be less than the BAAQMD efficiency metric threshold of 4.6 MT CO_2E per service population per year, as determined in the 2014 Report.

Revised Pre-Construction Export Scenario 1 (9 CY Trucks)

Table 14, Revised Pre-Construction Export Scenario 1 (9 CY Trucks) Estimated Annual Construction Greenhouse Gas Emissions, shows the estimated annual construction emissions associated with export of existing stockpiled material under Scenario 1, which assumes 25,556 one-way haul truck trips.

Table 14
Revised Pre-Construction Export Scenario 1 (9 CY Trucks) Estimated Annual Construction Greenhouse Gas Emissions

Year	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
2015	637.61	0.03	0.00	638.15

See Attachment A for detailed results.
MT = metric tons; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2E = carbon dioxide equivalent

As shown in Table 14, the estimated GHG emissions generated during pre-construction export for the revised Scenario 1 assuming export using 20 CY trucks would be approximately 638 MT CO_2E in 2015. Of the 638 MT CO_2E total, on-site (off-road) sources were estimated to generate 70 MT CO_2E, and off-site (vehicle) sources were estimated to generate 568 MT CO_2E.

Estimated total GHG emissions generated during construction of the proposed project was estimated to be 1,023 MT CO_2E (see Table 12, 2014 Report Estimated Annual Construction Greenhouse Gas Emissions). Project-generated construction emissions plus pre-construction export Scenario 1 emissions would be 1,662 MT CO_2E; when amortized over 30 years, emissions would be 55 MT CO_2E per year. As shown in Table 13, 2014 Report Estimated Annual Operational Greenhouse Gas Emissions, estimated annual project-generated GHG emissions in 2018, assuming incorporation of proposed sustainable design measures with quantifiable reductions, would be approximately 2,495 MT CO_2E per year as a result of project operations.

Estimated project emissions (with project features) and amortized construction emissions from pre-construction export emissions resulting from Scenario 1 and 2014 Report proposed-project-generated construction emissions would be 2,550 MT CO_2E per year. When divided by the service population (765 persons), emissions would be 3.33 MT CO_2E per service population per year. Under pre-construction export Scenario 1, estimated annual project-generated emissions in 2018 from area and energy sources, mobile sources, and amortized project construction emissions would be less than the BAAQMD efficiency metric threshold of 4.6 MT CO_2E per service population per year.

Revised Pre-Construction Export Scenario 2 (20 CY Trucks)

Table 15, Revised Pre-Construction Export Scenario 2 (20 CY Trucks) Estimated Annual Construction Greenhouse Gas Emissions, shows the estimated annual construction emissions associated with export of existing stockpiled material under Scenario 2, which assumes 11,500 one-way haul truck trips.

Table 15
Revised Pre-Construction Export Scenario 2 (20 CY Trucks) Estimated Annual Construction Greenhouse Gas Emissions

Year	MT CO_2	MT CH_4	MT N_2O	MT CO_2E
2015	458.13	0.02	0.00	458.59

See Attachment A for detailed results.
MT = metric tons; CO_2 = carbon dioxide; CH_4 = methane; N_2O = nitrous oxide; CO_2E = carbon dioxide equivalent

As shown in Table 15, the estimated GHG emissions generated during pre-construction export for the revised Scenario 2 assuming export using 20 CY trucks would be approximately 459 MT CO_2E in 2015. Of the 459 MT CO_2E total, on-site (off-road) sources were estimated to generate 62 MT CO_2E, and off-site (vehicle) sources were estimated to generate 397 MT CO_2E.

Total GHG emissions generated during construction of the proposed project was estimated to be 1,023 MT CO_2E (see Table 12, 2014 Report Estimated Annual Construction Greenhouse Gas Emissions). Project-generated construction emissions plus pre-construction export Scenario 2 emissions would be 1,482 MT CO_2E; when amortized over 30 years, emissions would be 49 MT CO_2E per year. As shown in Table 13, 2014 Report Estimated Annual Operational Greenhouse Gas Emissions, estimated annual project-generated GHG emissions in 2018, assuming incorporation of proposed sustainable design measures with quantifiable reductions, would be approximately 2,495 MT CO_2E per year as a result of project operations.

Estimated project emissions (with project features) and amortized construction emissions from pre-construction export emissions resulting from Scenario 2 and 2014 Report proposed-project-generated construction emissions would be 2,544 MT CO_2E. When divided by the service population (765 persons), emissions would be 3.33 MT CO_2E per service population per year. Under pre-construction export Scenario 2, estimated annual project-generated emissions in 2018 from area and energy sources, mobile sources, and amortized project construction emissions would be less than the BAAQMD efficiency metric threshold of 4.6 MT CO_2E per service population per year.

5 CONCLUSION

Emissions generated during construction of the revised pre-construction export Scenario 1 and the revised pre-construction export Scenario 2 would not exceed the SBCAPCD's general rule of 25 tons per year of ROC or NO_x used for determining significance of construction exhaust emissions. The combination of 2014 Report maximum annual emissions and annual revised pre-construction export emissions from Scenario 1 and Scenario 2 would also not exceed the SBCAPCD's general rule of 25 tons per year of ROC or NO_x used for determining significance of construction exhaust emissions.

Estimated proposed project emissions (with project features) and amortized construction emissions from pre-construction export emissions resulting from Scenario 1 and 2014 Report proposed-project-generated construction emissions would be 2,550 MT CO_2E per year. When divided by the service population (765 persons), emissions would be 3.33 MT CO_2E per service population per year, which would be less than the BAAQMD efficiency metric threshold of 4.6 MT CO_2E per service population per year. Estimated proposed project emissions (with project features) and amortized construction emissions from pre-construction export emissions resulting from Scenario 2 and 2014 Report proposed-project-generated construction emissions would be 2,544 MT CO_2E per year. When divided by the service population (765 persons), emissions would be 3.33 MT CO_2E per service population per year, which would be less than the BAAQMD efficiency metric threshold of 4.6 MT CO_2E per service population per year.

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ATTACHMENT A

CalEEMod Output

Heritage Ridge Pre-Construction Export Scenario 1 (9 CY Trucks)

Santa Barbara-South of Santa Ynez Range County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	16.19	705,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See 1.0, Project Characteristics.

Land Use - User Defined Residential for pre-construction export of stockpiled material.

Construction Phase - 27 weeks (135 days). See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Trips and VMT - Assumptions: 115,000 cubic yards of export, trucks with a hauling capacity of 9 cubic yards, 25,556 one-way haul-truck trips, medium-heavy-duty trucks for hauling vehicle class. See 3.0, Construction Detail.

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					
2015	4.7123	54.5026	36.8930	0.1024	3.8630	1.5907	5.4537	1.0933	1.4632	2.5565	0.0000	10,391.2542	10,391.2542	0.4233	0.0000	10,400.1440
Total	**4.7123**	**54.5026**	**36.8930**	**0.1024**	**3.8630**	**1.5907**	**5.4537**	**1.0933**	**1.4632**	**2.5565**	**0.0000**	**10,391.2542**	**10,391.2542**	**0.4233**	**0.0000**	**10,400.1440**

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					
2015	4.7123	54.5026	36.8930	0.1024	3.7087	1.5907	5.2994	1.0733	1.4632	2.5365	0.0000	10,391.2542	10,391.2542	0.4233	0.0000	10,400.1440
Total	**4.7123**	**54.5026**	**36.8930**	**0.1024**	**3.7087**	**1.5907**	**5.2994**	**1.0733**	**1.4632**	**2.5365**	**0.0000**	**10,391.2542**	**10,391.2542**	**0.4233**	**0.0000**	**10,400.1440**

	ROG	NOx	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**	**3.99**	**0.00**	**2.83**	**1.83**	**0.00**	**0.78**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pre-Construction Export - Grading	Grading	6/1/2015	12/4/2015	5	135	

Acres of Grading (Grading Phase): 16.19

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pre-Construction Export - Grading	Crawler Tractors	1	8.00	208	0.43
Pre-Construction Export - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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
Pre-Construction Export - Grading	2	6.00	4.00	25,556.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	MHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Pre-Construction Export - Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2529	0.0000	0.2529	0.0328	0.0000	0.0328			0.0000			0.0000
Off-Road	1.0719	13.1226	5.2900	0.0108		0.6423	0.6423		0.5909	0.5909		1,136.5584	1,136.5584	0.3393		1,143.6839
Total	**1.0719**	**13.1226**	**5.2900**	**0.0108**	**0.2529**	**0.6423**	**0.8952**	**0.0328**	**0.5909**	**0.6237**		**1,136.5584**	**1,136.5584**	**0.3393**		**1,143.6839**

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	3.5505	40.9909	30.3834	0.0904	3.5373	0.9428	4.4801	1.0409	0.8672	1.9081		9,141.6531	9,141.6531	0.0799		9,143.3311
Vendor	0.0583	0.3385	0.7761	6.2000e-004	0.0166	5.1500e-003	0.0218	4.7300e-003	4.7400e-003	9.4700e-003		61.5983	61.5983	6.1000e-004		61.6111
Worker	0.0317	0.0507	0.4435	6.0000e-004	0.0561	4.6000e-004	0.0566	0.0149	4.2000e-004	0.0153		51.4445	51.4445	3.5000e-003		51.5179
Total	**3.6404**	**41.3800**	**31.6030**	**0.0916**	**3.6101**	**0.9484**	**4.5585**	**1.0605**	**0.8723**	**1.9328**		**9,254.6959**	**9,254.6959**	**0.0840**		**9,256.4602**

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					0.0986	0.0000	0.0986	0.0128	0.0000	0.0128			0.0000			0.0000
Off-Road	1.0719	13.1226	5.2900	0.0108		0.6423	0.6423		0.5909	0.5909	0.0000	1,136.5584	1,136.5584	0.3393		1,143.6839
Total	**1.0719**	**13.1226**	**5.2900**	**0.0108**	**0.0986**	**0.6423**	**0.7409**	**0.0128**	**0.5909**	**0.6037**	**0.0000**	**1,136.5584**	**1,136.5584**	**0.3393**		**1,143.6839**

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	3.5505	40.9909	30.3834	0.0904	3.5373	0.9428	4.4801	1.0409	0.8672	1.9081		9,141.6531	9,141.6531	0.0799		9,143.3311
Vendor	0.0583	0.3385	0.7761	6.2000e-004	0.0166	5.1500e-003	0.0218	4.7300e-003	4.7400e-003	9.4700e-003		61.5983	61.5983	6.1000e-004		61.6111
Worker	0.0317	0.0507	0.4435	6.0000e-004	0.0561	4.6000e-004	0.0566	0.0149	4.2000e-004	0.0153		51.4445	51.4445	3.5000e-003		51.5179
Total	**3.6404**	**41.3800**	**31.6030**	**0.0916**	**3.6101**	**0.9484**	**4.5585**	**1.0605**	**0.8723**	**1.9328**		**9,254.6959**	**9,254.6959**	**0.0840**		**9,256.4602**

Heritage Ridge Pre-Construction Export Scenario 1 (9 CY Trucks)

Santa Barbara-South of Santa Ynez Range County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	16.19	705,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See 1.0, Project Characteristics.

Land Use - User Defined Residential for pre-construction export of stockpiled material.

Construction Phase - 27 weeks (135 days). See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Trips and VMT - Assumptions: 115,000 cubic yards of export, trucks with a hauling capacity of 9 cubic yards, 25,556 one-way haul-truck trips, medium-heavy-duty trucks for hauling vehicle class. See 3.0, Construction Detail.

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					
2015	4.4052	53.6383	31.3710	0.1027	3.8630	1.5848	5.4478	1.0933	1.4579	2.5511	0.0000	10,428.9401	10,428.9401	0.4228	0.0000	10,437.8194
Total	**4.4052**	**53.6383**	**31.3710**	**0.1027**	**3.8630**	**1.5848**	**5.4478**	**1.0933**	**1.4579**	**2.5511**	**0.0000**	**10,428.9401**	**10,428.9401**	**0.4228**	**0.0000**	**10,437.8194**

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					
2015	4.4052	53.6383	31.3710	0.1027	3.7087	1.5848	5.2936	1.0733	1.4579	2.5311	0.0000	10,428.9401	10,428.9401	0.4228	0.0000	10,437.8194
Total	**4.4052**	**53.6383**	**31.3710**	**0.1027**	**3.7087**	**1.5848**	**5.2936**	**1.0733**	**1.4579**	**2.5311**	**0.0000**	**10,428.9401**	**10,428.9401**	**0.4228**	**0.0000**	**10,437.8194**

	ROG	NOx	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**	**3.99**	**0.00**	**2.83**	**1.83**	**0.00**	**0.78**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pre-Construction Export - Grading	Grading	6/1/2015	12/4/2015	5	135	

Acres of Grading (Grading Phase): 16.19

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pre-Construction Export - Grading	Crawler Tractors	1	8.00	208	0.43
Pre-Construction Export - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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
Pre-Construction Export - Grading	2	6.00	4.00	25,556.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	MHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Pre-Construction Export - Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2529	0.0000	0.2529	0.0328	0.0000	0.0328			0.0000			0.0000
Off-Road	1.0719	13.1226	5.2900	0.0108		0.6423	0.6423		0.5909	0.5909		1,136.5584	1,136.5584	0.3393		1,143.6839
Total	**1.0719**	**13.1226**	**5.2900**	**0.0108**	**0.2529**	**0.6423**	**0.8952**	**0.0328**	**0.5909**	**0.6237**		**1,136.5584**	**1,136.5584**	**0.3393**		**1,143.6839**

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	3.2579	40.1379	25.1057	0.0906	3.5373	0.9370	4.4744	1.0409	0.8619	1.9028		9,177.3946	9,177.3946	0.0794		9,179.0623
Vendor	0.0466	0.3334	0.5583	6.2000e-004	0.0166	5.0400e-003	0.0217	4.7300e-003	4.6300e-003	9.3700e-003		62.3316	62.3316	5.9000e-004		62.3440
Worker	0.0288	0.0444	0.4170	6.1000e-004	0.0561	4.6000e-004	0.0566	0.0149	4.2000e-004	0.0153		52.6557	52.6557	3.5000e-003		52.7292
Total	**3.3333**	**40.5156**	**26.0809**	**0.0919**	**3.6101**	**0.9425**	**4.5526**	**1.0605**	**0.8669**	**1.9274**		**9,292.3818**	**9,292.3818**	**0.0835**		**9,294.1355**

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					0.0986	0.0000	0.0986	0.0128	0.0000	0.0128			0.0000			0.0000
Off-Road	1.0719	13.1226	5.2900	0.0108		0.6423	0.6423		0.5909	0.5909	0.0000	1,136.5584	1,136.5584	0.3393		1,143.6839
Total	**1.0719**	**13.1226**	**5.2900**	**0.0108**	**0.0986**	**0.6423**	**0.7409**	**0.0128**	**0.5909**	**0.6037**	**0.0000**	**1,136.5584**	**1,136.5584**	**0.3393**		**1,143.6839**

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	3.2579	40.1379	25.1057	0.0906	3.5373	0.9370	4.4744	1.0409	0.8619	1.9028		9,177.3946	9,177.3946	0.0794		9,179.0623
Vendor	0.0466	0.3334	0.5583	6.2000e-004	0.0166	5.0400e-003	0.0217	4.7300e-003	4.6300e-003	9.3700e-003		62.3316	62.3316	5.9000e-004		62.3440
Worker	0.0288	0.0444	0.4170	6.1000e-004	0.0561	4.6000e-004	0.0566	0.0149	4.2000e-004	0.0153		52.6557	52.6557	3.5000e-003		52.7292
Total	**3.3333**	**40.5156**	**26.0809**	**0.0919**	**3.6101**	**0.9425**	**4.5526**	**1.0605**	**0.8669**	**1.9274**		**9,292.3818**	**9,292.3818**	**0.0835**		**9,294.1355**

Heritage Ridge Pre-Construction Export Scenario 1 (9 CY Trucks)

Santa Barbara-South of Santa Ynez Range County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	16.19	705,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See 1.0, Project Characteristics.

Land Use - User Defined Residential for pre-construction export of stockpiled material.

Construction Phase - 27 weeks (135 days). See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Trips and VMT - Assumptions: 115,000 cubic yards of export, trucks with a hauling capacity of 9 cubic yards, 25,556 one-way haul-truck trips, medium-heavy-duty trucks for hauling vehicle class. See 3.0, Construction Detail.

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					
2015	0.3085	3.7204	2.3355	6.9200e-003	0.2564	0.1071	0.3635	0.0727	0.0986	0.1713	0.0000	637.6079	637.6079	0.0259	0.0000	638.1519
Total	**0.3085**	**3.7204**	**2.3355**	**6.9200e-003**	**0.2564**	**0.1071**	**0.3635**	**0.0727**	**0.0986**	**0.1713**	**0.0000**	**637.6079**	**637.6079**	**0.0259**	**0.0000**	**638.1519**

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					
2015	0.3085	3.7204	2.3355	6.9200e-003	0.2460	0.1071	0.3531	0.0714	0.0986	0.1699	0.0000	637.6078	637.6078	0.0259	0.0000	638.1518
Total	**0.3085**	**3.7204**	**2.3355**	**6.9200e-003**	**0.2460**	**0.1071**	**0.3531**	**0.0714**	**0.0986**	**0.1699**	**0.0000**	**637.6078**	**637.6078**	**0.0259**	**0.0000**	**638.1518**

	ROG	NOx	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**	**4.06**	**0.00**	**2.86**	**1.86**	**0.00**	**0.79**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pre-Construction Export - Grading	Grading	6/1/2015	12/4/2015	5	135	

Acres of Grading (Grading Phase): 16.19

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pre-Construction Export - Grading	Crawler Tractors	1	8.00	208	0.43
Pre-Construction Export - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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
Pre-Construction Export - Grading	2	6.00	4.00	25,556.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	MHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Pre-Construction Export - Grading - 2015

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					0.0171	0.0000	0.0171	2.2100e-003	0.0000	2.2100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0724	0.8858	0.3571	7.3000e-004		0.0434	0.0434		0.0399	0.0399	0.0000	69.5971	69.5971	0.0208	0.0000	70.0335
Total	**0.0724**	**0.8858**	**0.3571**	**7.3000e-004**	**0.0171**	**0.0434**	**0.0604**	**2.2100e-003**	**0.0399**	**0.0421**	**0.0000**	**69.5971**	**69.5971**	**0.0208**	**0.0000**	**70.0335**

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	0.2305	2.8081	1.9030	6.1100e-003	0.2345	0.0634	0.2979	0.0692	0.0583	0.1275	0.0000	561.0583	561.0583	4.8800e-003	0.0000	561.1607
Vendor	3.5800e-003	0.0232	0.0464	4.0000e-005	1.1000e-003	3.4000e-004	1.4400e-003	3.1000e-004	3.2000e-004	6.3000e-004	0.0000	3.7980	3.7980	4.0000e-005	0.0000	3.7988
Worker	2.0100e-003	3.3600e-003	0.0290	4.0000e-005	3.7100e-003	3.0000e-005	3.7400e-003	9.8000e-004	3.0000e-005	1.0100e-003	0.0000	3.1545	3.1545	2.1000e-004	0.0000	3.1590
Total	**0.2361**	**2.8346**	**1.9784**	**6.1900e-003**	**0.2393**	**0.0638**	**0.3031**	**0.0705**	**0.0587**	**0.1292**	**0.0000**	**568.0108**	**568.0108**	**5.1300e-003**	**0.0000**	**568.1185**

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					6.6600e-003	0.0000	6.6600e-003	8.6000e-004	0.0000	8.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0724	0.8858	0.3571	7.3000e-004		0.0434	0.0434		0.0399	0.0399	0.0000	69.5970	69.5970	0.0208	0.0000	70.0334
Total	**0.0724**	**0.8858**	**0.3571**	**7.3000e-004**	**6.6600e-003**	**0.0434**	**0.0500**	**8.6000e-004**	**0.0399**	**0.0408**	**0.0000**	**69.5970**	**69.5970**	**0.0208**	**0.0000**	**70.0334**

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	0.2305	2.8081	1.9030	6.1100e-003	0.2345	0.0634	0.2979	0.0692	0.0583	0.1275	0.0000	561.0583	561.0583	4.8800e-003	0.0000	561.1607
Vendor	3.5800e-003	0.0232	0.0464	4.0000e-005	1.1000e-003	3.4000e-004	1.4400e-003	3.1000e-004	3.2000e-004	6.3000e-004	0.0000	3.7980	3.7980	4.0000e-005	0.0000	3.7988
Worker	2.0100e-003	3.3600e-003	0.0290	4.0000e-005	3.7100e-003	3.0000e-005	3.7400e-003	9.8000e-004	3.0000e-005	1.0100e-003	0.0000	3.1545	3.1545	2.1000e-004	0.0000	3.1590
Total	**0.2361**	**2.8346**	**1.9784**	**6.1900e-003**	**0.2393**	**0.0638**	**0.3031**	**0.0705**	**0.0587**	**0.1292**	**0.0000**	**568.0108**	**568.0108**	**5.1300e-003**	**0.0000**	**568.1185**

Heritage Ridge Pre-Construction Export Scenario 2 (20 CY Trucks)

Santa Barbara-South of Santa Ynez Range County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	16.19	705,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See 1.0, Project Characteristics.

Land Use - User Defined Residential for pre-construction export of stockpiled material.

Construction Phase - 24 weeks (120 days). See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Trips and VMT - Assumptions: 115,000 cubic yards of export, trucks with a hauling capacity of 20 cubic yards, 11,500 one-way haul-truck trips, heavy-heavy-duty trucks for hauling vehicle class. See 3.0, Construction Detail.

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					
2015	4.0439	48.4295	44.0058	0.0827	2.0150	1.1618	3.1768	0.5096	1.0687	1.5782	0.0000	8,406.3644	8,406.3644	0.4032	0.0000	8,414.8315
Total	**4.0439**	**48.4295**	**44.0058**	**0.0827**	**2.0150**	**1.1618**	**3.1768**	**0.5096**	**1.0687**	**1.5782**	**0.0000**	**8,406.3644**	**8,406.3644**	**0.4032**	**0.0000**	**8,414.8315**

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					
2015	4.0439	48.4295	44.0058	0.0827	1.8414	1.1618	3.0032	0.4871	1.0687	1.5557	0.0000	8,406.3644	8,406.3644	0.4032	0.0000	8,414.8315
Total	**4.0439**	**48.4295**	**44.0058**	**0.0827**	**1.8414**	**1.1618**	**3.0032**	**0.4871**	**1.0687**	**1.5557**	**0.0000**	**8,406.3644**	**8,406.3644**	**0.4032**	**0.0000**	**8,414.8315**

	ROG	NOx	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**	**8.61**	**0.00**	**5.46**	**4.41**	**0.00**	**1.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pre-Construction Export - Grading	Grading	6/1/2015	11/13/2015	5	120	

Acres of Grading (Grading Phase): 16.19

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pre-Construction Export - Grading	Crawler Tractors	1	8.00	208	0.43
Pre-Construction Export - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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
Pre-Construction Export - Grading	2	6.00	4.00	11,500.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Pre-Construction Export - Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2845	0.0000	0.2845	0.0369	0.0000	0.0369			0.0000			0.0000
Off-Road	1.0719	13.1226	5.2900	0.0108		0.6423	0.6423		0.5909	0.5909		1,136.5584	1,136.5584	0.3393		1,143.6839
Total	**1.0719**	**13.1226**	**5.2900**	**0.0108**	**0.2845**	**0.6423**	**0.9268**	**0.0369**	**0.5909**	**0.6278**		**1,136.5584**	**1,136.5584**	**0.3393**		**1,143.6839**

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	2.8820	34.9177	37.4961	0.0706	1.6577	0.5139	2.1716	0.4531	0.4726	0.9257		7,156.7633	7,156.7633	0.0598		7,158.0186
Vendor	0.0583	0.3385	0.7761	6.2000e-004	0.0166	5.1500e-003	0.0218	4.7300e-003	4.7400e-003	9.4700e-003		61.5983	61.5983	6.1000e-004		61.6111
Worker	0.0317	0.0507	0.4435	6.0000e-004	0.0561	4.6000e-004	0.0566	0.0149	4.2000e-004	0.0153		51.4445	51.4445	3.5000e-003		51.5179
Total	**2.9720**	**35.3069**	**38.7157**	**0.0719**	**1.7305**	**0.5195**	**2.2500**	**0.4727**	**0.4778**	**0.9504**		**7,269.8060**	**7,269.8060**	**0.0639**		**7,271.1477**

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					0.1110	0.0000	0.1110	0.0144	0.0000	0.0144			0.0000			0.0000
Off-Road	1.0719	13.1226	5.2900	0.0108		0.6423	0.6423		0.5909	0.5909	0.0000	1,136.5584	1,136.5584	0.3393		1,143.6839
Total	**1.0719**	**13.1226**	**5.2900**	**0.0108**	**0.1110**	**0.6423**	**0.7533**	**0.0144**	**0.5909**	**0.6053**	**0.0000**	**1,136.5584**	**1,136.5584**	**0.3393**		**1,143.6839**

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	2.8820	34.9177	37.4961	0.0706	1.6577	0.5139	2.1716	0.4531	0.4726	0.9257		7,156.7633	7,156.7633	0.0598		7,158.0186
Vendor	0.0583	0.3385	0.7761	6.2000e-004	0.0166	5.1500e-003	0.0218	4.7300e-003	4.7400e-003	9.4700e-003		61.5983	61.5983	6.1000e-004		61.6111
Worker	0.0317	0.0507	0.4435	6.0000e-004	0.0561	4.6000e-004	0.0566	0.0149	4.2000e-004	0.0153		51.4445	51.4445	3.5000e-003		51.5179
Total	**2.9720**	**35.3069**	**38.7157**	**0.0719**	**1.7305**	**0.5195**	**2.2500**	**0.4727**	**0.4778**	**0.9504**		**7,269.8060**	**7,269.8060**	**0.0639**		**7,271.1477**

Heritage Ridge Pre-Construction Export Scenario 2 (20 CY Trucks)

Santa Barbara-South of Santa Ynez Range County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	16.19	705,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See 1.0, Project Characteristics.

Land Use - User Defined Residential for pre-construction export of stockpiled material.

Construction Phase - 24 weeks (120 days). See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Trips and VMT - Assumptions: 115,000 cubic yards of export, trucks with a hauling capacity of 20 cubic yards, 11,500 one-way haul-truck trips, heavy-heavy-duty trucks for hauling vehicle class. See 3.0, Construction Detail.

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					
2015	3.6269	47.5741	36.0238	0.0827	2.0150	1.1593	3.1742	0.5096	1.0663	1.5759	0.0000	8,425.3501	8,425.3501	0.4025	0.0000	8,433.8015
Total	**3.6269**	**47.5741**	**36.0238**	**0.0827**	**2.0150**	**1.1593**	**3.1742**	**0.5096**	**1.0663**	**1.5759**	**0.0000**	**8,425.3501**	**8,425.3501**	**0.4025**	**0.0000**	**8,433.8015**

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					
2015	3.6269	47.5741	36.0238	0.0827	1.8414	1.1593	3.0007	0.4871	1.0663	1.5534	0.0000	8,425.3501	8,425.3501	0.4025	0.0000	8,433.8015
Total	**3.6269**	**47.5741**	**36.0238**	**0.0827**	**1.8414**	**1.1593**	**3.0007**	**0.4871**	**1.0663**	**1.5534**	**0.0000**	**8,425.3501**	**8,425.3501**	**0.4025**	**0.0000**	**8,433.8015**

	ROG	NOx	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**	**8.61**	**0.00**	**5.47**	**4.41**	**0.00**	**1.43**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pre-Construction Export - Grading	Grading	6/1/2015	11/13/2015	5	120	

Acres of Grading (Grading Phase): 16.19

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pre-Construction Export - Grading	Crawler Tractors	1	8.00	208	0.43
Pre-Construction Export - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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
Pre-Construction Export - Grading	2	6.00	4.00	11,500.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Pre-Construction Export - Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2845	0.0000	0.2845	0.0369	0.0000	0.0369			0.0000			0.0000
Off-Road	1.0719	13.1226	5.2900	0.0108		0.6423	0.6423		0.5909	0.5909		1,136.5584	1,136.5584	0.3393		1,143.6839
Total	**1.0719**	**13.1226**	**5.2900**	**0.0108**	**0.2845**	**0.6423**	**0.9268**	**0.0369**	**0.5909**	**0.6278**		**1,136.5584**	**1,136.5584**	**0.3393**		**1,143.6839**

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	2.4795	34.0738	29.7585	0.0707	1.6577	0.5115	2.1692	0.4531	0.4704	0.9234		7,173.8045	7,173.8045	0.0591		7,175.0445
Vendor	0.0466	0.3334	0.5583	6.2000e-004	0.0166	5.0400e-003	0.0217	4.7300e-003	4.6300e-003	9.3700e-003		62.3316	62.3316	5.9000e-004		62.3440
Worker	0.0288	0.0444	0.4170	6.1000e-004	0.0561	4.6000e-004	0.0566	0.0149	4.2000e-004	0.0153		52.6557	52.6557	3.5000e-003		52.7292
Total	**2.5550**	**34.4515**	**30.7337**	**0.0719**	**1.7305**	**0.5170**	**2.2474**	**0.4727**	**0.4754**	**0.9481**		**7,288.7918**	**7,288.7918**	**0.0631**		**7,290.1176**

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					0.1110	0.0000	0.1110	0.0144	0.0000	0.0144			0.0000			0.0000
Off-Road	1.0719	13.1226	5.2900	0.0108		0.6423	0.6423		0.5909	0.5909	0.0000	1,136.5584	1,136.5584	0.3393		1,143.6839
Total	**1.0719**	**13.1226**	**5.2900**	**0.0108**	**0.1110**	**0.6423**	**0.7533**	**0.0144**	**0.5909**	**0.6053**	**0.0000**	**1,136.5584**	**1,136.5584**	**0.3393**		**1,143.6839**

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	2.4795	34.0738	29.7585	0.0707	1.6577	0.5115	2.1692	0.4531	0.4704	0.9234		7,173.8045	7,173.8045	0.0591		7,175.0445
Vendor	0.0466	0.3334	0.5583	6.2000e-004	0.0166	5.0400e-003	0.0217	4.7300e-003	4.6300e-003	9.3700e-003		62.3316	62.3316	5.9000e-004		62.3440
Worker	0.0288	0.0444	0.4170	6.1000e-004	0.0561	4.6000e-004	0.0566	0.0149	4.2000e-004	0.0153		52.6557	52.6557	3.5000e-003		52.7292
Total	**2.5550**	**34.4515**	**30.7337**	**0.0719**	**1.7305**	**0.5170**	**2.2474**	**0.4727**	**0.4754**	**0.9481**		**7,288.7918**	**7,288.7918**	**0.0631**		**7,290.1176**

Heritage Ridge Pre-Construction Export Scenario 2 (20 CY Trucks)

Santa Barbara-South of Santa Ynez Range County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Residential	1.00	Dwelling Unit	16.19	705,236.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	37
Climate Zone	8			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - See 1.0, Project Characteristics.

Land Use - User Defined Residential for pre-construction export of stockpiled material.

Construction Phase - 24 weeks (120 days). See 3.0, Construction Detail.

Off-road Equipment - See 3.0, Construction Detail.

Grading - See 3.0, Construction Detail.

Trips and VMT - Assumptions: 115,000 cubic yards of export, trucks with a hauling capacity of 20 cubic yards, 11,500 one-way haul-truck trips, heavy-heavy-duty trucks for hauling vehicle class. See 3.0, Construction Detail.

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					
2015	0.2316	2.9331	2.4444	4.9600e-003	0.1189	0.0696	0.1885	0.0301	0.0640	0.0941	0.0000	458.1325	458.1325	0.0219	0.0000	458.5929
Total	**0.2316**	**2.9331**	**2.4444**	**4.9600e-003**	**0.1189**	**0.0696**	**0.1885**	**0.0301**	**0.0640**	**0.0941**	**0.0000**	**458.1325**	**458.1325**	**0.0219**	**0.0000**	**458.5929**

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					
2015	0.2316	2.9331	2.4444	4.9600e-003	0.1085	0.0696	0.1781	0.0287	0.0640	0.0928	0.0000	458.1324	458.1324	0.0219	0.0000	458.5928
Total	**0.2316**	**2.9331**	**2.4444**	**4.9600e-003**	**0.1085**	**0.0696**	**0.1781**	**0.0287**	**0.0640**	**0.0928**	**0.0000**	**458.1324**	**458.1324**	**0.0219**	**0.0000**	**458.5928**

	ROG	NOx	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**	**8.76**	**0.00**	**5.52**	**4.49**	**0.00**	**1.43**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Pre-Construction Export - Grading	Grading	6/1/2015	11/13/2015	5	120	

Acres of Grading (Grading Phase): 16.19

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Pre-Construction Export - Grading	Crawler Tractors	1	8.00	208	0.43
Pre-Construction Export - Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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
Pre-Construction Export - Grading	2	6.00	4.00	11,500.00	12.30	4.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Pre-Construction Export - Grading - 2015

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					0.0171	0.0000	0.0171	2.2100e-003	0.0000	2.2100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0643	0.7874	0.3174	6.5000e-004		0.0385	0.0385		0.0355	0.0355	0.0000	61.8641	61.8641	0.0185	0.0000	62.2520
Total	**0.0643**	**0.7874**	**0.3174**	**6.5000e-004**	**0.0171**	**0.0385**	**0.0556**	**2.2100e-003**	**0.0355**	**0.0377**	**0.0000**	**61.8641**	**61.8641**	**0.0185**	**0.0000**	**62.2520**

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	0.1623	2.1221	2.0600	4.2400e-003	0.0975	0.0308	0.1283	0.0267	0.0283	0.0550	0.0000	390.0884	390.0884	3.2300e-003	0.0000	390.1562
Vendor	3.1900e-003	0.0206	0.0412	4.0000e-005	9.8000e-004	3.1000e-004	1.2800e-003	2.8000e-004	2.8000e-004	5.6000e-004	0.0000	3.3760	3.3760	3.0000e-005	0.0000	3.3767
Worker	1.7800e-003	2.9900e-003	0.0257	4.0000e-005	3.2900e-003	3.0000e-005	3.3200e-003	8.7000e-004	3.0000e-005	9.0000e-004	0.0000	2.8040	2.8040	1.9000e-004	0.0000	2.8080
Total	**0.1672**	**2.1457**	**2.1270**	**4.3200e-003**	**0.1018**	**0.0311**	**0.1329**	**0.0279**	**0.0286**	**0.0565**	**0.0000**	**396.2684**	**396.2684**	**3.4500e-003**	**0.0000**	**396.3409**

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					6.6600e-003	0.0000	6.6600e-003	8.6000e-004	0.0000	8.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0643	0.7874	0.3174	6.5000e-004		0.0385	0.0385		0.0355	0.0355	0.0000	61.8640	61.8640	0.0185	0.0000	62.2519
Total	**0.0643**	**0.7874**	**0.3174**	**6.5000e-004**	**6.6600e-003**	**0.0385**	**0.0452**	**8.6000e-004**	**0.0355**	**0.0363**	**0.0000**	**61.8640**	**61.8640**	**0.0185**	**0.0000**	**62.2519**

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	0.1623	2.1221	2.0600	4.2400e-003	0.0975	0.0308	0.1283	0.0267	0.0283	0.0550	0.0000	390.0884	390.0884	3.2300e-003	0.0000	390.1562
Vendor	3.1900e-003	0.0206	0.0412	4.0000e-005	9.8000e-004	3.1000e-004	1.2800e-003	2.8000e-004	2.8000e-004	5.6000e-004	0.0000	3.3760	3.3760	3.0000e-005	0.0000	3.3767
Worker	1.7800e-003	2.9900e-003	0.0257	4.0000e-005	3.2900e-003	3.0000e-005	3.3200e-003	8.7000e-004	3.0000e-005	9.0000e-004	0.0000	2.8040	2.8040	1.9000e-004	0.0000	2.8080
Total	**0.1672**	**2.1457**	**2.1270**	**4.3200e-003**	**0.1018**	**0.0311**	**0.1329**	**0.0279**	**0.0286**	**0.0565**	**0.0000**	**396.2684**	**396.2684**	**3.4500e-003**	**0.0000**	**396.3409**

Greenhouse Gas Emission Worksheet With Sustainable Design Features
N20 Mobile Emissions Heritage Ridge Project

From URBEMIS 2007 Vehicle Fleet Mix Output:

Annual VMT: 5,441,326

Vehicle Type	Percent Type	CH4 Emission Factor (g/mile)*	CH4 Emission (g/mile)**	N2O Emission Factor (g/mile)*	N2O Emission (g/mile)**
Light Auto	46.0%	0.04	0.0184	0.04	0.0184
Light Truck < 3750 lbs	10.3%	0.05	0.00515	0.06	0.00618
Light Truck 3751-5750 lbs	23.2%	0.05	0.0116	0.06	0.01392
Med Truck 5751-8500 lbs	12.2%	0.12	0.01464	0.2	0.0244
Lite-Heavy Truck 8501-10,000 lbs	2.1%	0.12	0.00252	0.2	0.0042
Lite-Heavy Truck 10,001-14,000 lbs	0.5%	0.09	0.00045	0.125	0.000625
Med-Heavy Truck 14,001-33,000 lbs	1.0%	0.06	0.0006	0.05	0.0005
Heavy-Heavy Truck 33,001-60,000 lbs	2.9%	0.06	0.00174	0.05	0.00145
Other Bus	0.1%	0.06	0.00006	0.05	0.00005
Urban Bus	0.1%	0.06	0.00006	0.05	0.00005
Motorcycle	1.1%	0.09	0.00099	0.01	0.00011
School Bus	0.1%	0.06	0.00006	0.05	0.00005
Motor Home	0.4%	0.09	0.00036	0.125	0.0005
Total	**100.0%**		**0.05663**		**0.070435**

Total Emissions (metric tons) =
Emission Factor by Vehicle Mix (g/mi) x Annual VMT(mi) x 0.000001 metric tons/g

Conversion to Carbon Dioxide Equivalency (CO2e) Units based on Global Warming Potential (GWP)

CH4	21	GWP
N2O	310	GWP
1 ton (short, US) =	0.90718474	metric ton

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N20 Emissions:	0.3833	metric tons N2O	**118.81**	metric tons CO2e
		Project Total:	***118.81***	***metric tons CO2e***

References

* from Table C.4: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (g/mile).
in California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
Assume Model year 2000-present, gasoline fueled.
** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
*** From URBEMIS 2007 results for mobile sources

Greenhouse Gas Emission Worksheet With Sustainable Design Features
N20 Mobile Emissions Heritage Ridge Project

From URBEMIS 2007 Vehicle Fleet Mix Output:

Annual VMT: 4,625,127

Vehicle Type	Percent Type	CH4 Emission Factor (g/mile)*	CH4 Emission (g/mile)**	N2O Emission Factor (g/mile)*	N2O Emission (g/mile)**
Light Auto	46.0%	0.04	0.0184	0.04	0.0184
Light Truck < 3750 lbs	10.3%	0.05	0.00515	0.06	0.00618
Light Truck 3751-5750 lbs	23.2%	0.05	0.0116	0.06	0.01392
Med Truck 5751-8500 lbs	12.2%	0.12	0.01464	0.2	0.0244
Lite-Heavy Truck 8501-10,000 lbs	2.1%	0.12	0.00252	0.2	0.0042
Lite-Heavy Truck 10,001-14,000 lbs	0.5%	0.09	0.00045	0.125	0.000625
Med-Heavy Truck 14,001-33,000 lbs	1.0%	0.06	0.0006	0.05	0.0005
Heavy-Heavy Truck 33,001-60,000 lbs	2.9%	0.06	0.00174	0.05	0.00145
Other Bus	0.1%	0.06	0.00006	0.05	0.00005
Urban Bus	0.1%	0.06	0.00006	0.05	0.00005
Motorcycle	1.1%	0.09	0.00099	0.01	0.00011
School Bus	0.1%	0.06	0.00006	0.05	0.00005
Motor Home	0.4%	0.09	0.00036	0.125	0.0005
Total	**100.0%**		**0.05663**		**0.070435**

Total Emissions (metric tons) =
Emission Factor by Vehicle Mix (g/mi) x Annual VMT(mi) x 0.000001 metric tons/g

Conversion to Carbon Dioxide Equivalency (CO2e) Units based on Global Warming Potential (GWP)

CH4	21	GWP
N2O	310	GWP
1 ton (short, US) =	0.90718474	metric ton

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N20 Emissions:	0.3258	metric tons N2O	**100.99**	metric tons CO2e
		Project Total:	***100.99***	***metric tons CO2e***

References

* from Table C.4: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (g/mile).
in California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
Assume Model year 2000-present, gasoline fueled.
** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
*** From URBEMIS 2007 results for mobile sources

Greenhouse Gas Emission Worksheet

N20 Mobile Emissions Scenario 1: Nox

From URBEMIS 2007 Vehicle Fleet Mix Output:

Annual VMT: 511,120

Vehicle Type	Percent Type	CH4 Emission Factor (g/mile)*	N2O Emission Factor (g/mile)*
Heavy-Heavy Truck 33,001-60,000 lbs	2.9%	0.06	0.05
Total	**2.9%**		

Total Emissions (metric tons) =
Emission Factor by Vehicle Mix (g/mi) x Annual VMT(mi) x 0.000001 metric tons/g

Conversion to Carbon Dioxide Equivalency (CO2e) Units based on Global Warming Potential (GWP)

CH4	21	GWP
N2O	310	GWP
1 ton (short, US) =	0.90718474	metric ton

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N20 Emissions:	0.0256	metric tons N2O	**7.92**	metric tons CO2e
		Project Total:	***7.92 metric tons CO2e***	

References

* from Table C.4: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (g/mile).
in California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
Assume Model year 2000-present, gasoline fueled.

** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.

*** From URBEMIS 2007 results for mobile sources

Greenhouse Gas Emission Worksheet

N20 Mobile Emissions Scenario 2: Nox

From URBEMIS 2007 Vehicle Fleet Mix Output:

Annual VMT: 230,000

Vehicle Type	Percent Type	CH4 Emission Factor (g/mile)*	N2O Emission Factor (g/mile)*
Heavy-Heavy Truck 33,001-60,000 lbs	2.9%	0.06	0.05
Total	**2.9%**		

Total Emissions (metric tons) =
Emission Factor by Vehicle Mix (g/mi) x Annual VMT(mi) x 0.000001 metric tons/g

Conversion to Carbon Dioxide Equivalency (CO2e) Units based on Global Warming Potential (GWP)

CH4	21	GWP
N2O	310	GWP
1 ton (short, US) =	0.90718474	metric ton

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N20 Emissions:	0.0115	metric tons N2O	**3.57**	metric tons CO2e
		Project Total:	***3.57 metric tons CO2e***	

References

* from Table C.4: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (g/mile).
in California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
Assume Model year 2000-present, gasoline fueled.

** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.

*** From URBEMIS 2007 results for mobile sources