To: City of Riverside, Planning Division

From: Alex J. Garber

Date: 6/20/2022

Re: Air Quality, Energy, and Greenhouse Gas Impact Analysis for the Wood and Lurin Residential Development

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This technical memorandum presents an analysis of the air quality, energy, and greenhouse gas (GHG) impacts for the proposed Wood and Lurin residential development (project), located on the northeast corner of Lurin Avenue and Wood Road in the City of Riverside. The project proposes the construction of 96 single family homes and a 61,909 square foot (sf) park on an 18.92-acre site. The parcel on the northwest corner of Lurin Avenue and Dant Street (the southeastern most portion of the project site) is developed with a vacant 862 sf single-family residence and associated shed structure, and the remainder of the site is undeveloped. The site is currently partially developed with two dwelling units with accessory structures. For a conservative analysis, no credit was taken for the operation of the existing use. The project site is shown in Figure 1, *Project Site*. To support the CEQA document for the proposed project, this report analyzes the project's construction and operational impacts to air quality (emission of criterial pollutants) emissions using the California Emissions Estimator Model (CalEEMod) land use emission model. Table 1 shows the estimated construction schedule, which is expected to last about 18 months.

Table 1. Construction Schedule

Activity	Start Date	End Date	Total Days
Demolition	1/2/2023	1/13/2023	10
Site Preparation	1/14/2023	1/27/2023	10
Grading	1/28/2023	3/10/2023	30
Building Construction	3/11/2023	5/3/2024	300
Paving	5/4/2024	5/31/2024	10
Architectural Coating	6/1/2024	6/18/2024	10

Summary of Air Quality, Energy and GHG Impacts

Air Quality:

The project's maximum daily emissions (regional and local) for construction and operation of the project would not exceed SCAQMD's regional thresholds of significance. In addition, all construction activities would comply with applicable SCAQMD rules and regulations, including Rule 403 to minimize fugitive PM dust emissions, Rule 445 to prevent woodfire stoves, and Rule 1113 which allows only Low-Volatile Organic Compounds (VOC) paints. Projects that do not exceed the regional thresholds are assumed to not have a significant impact on a project level and cumulative level. Therefore, the proposed project would have less than significant air quality impacts.

Energy:

The project's energy consumption for construction does not have any unusual characteristics and is not less efficient compared with other similar construction sites. The operation of the project is also similar to other residential projects and would comply with Title 24 as well as all applicable City business and energy codes and ordinances.

GHG:
Finally, the proposed project's net GHG emissions of 1,570 $MTCO_2e$ per year are below the SCAQMD significance threshold of 3,000 $MTCO_2e$ per year for residential projects. Therefore, the project has a less then significant impact on GHG emissions.

Air Quality Impact Tables

Regional Emissions
The SCAQMD has adopted maximum daily emission thresholds[1] (pounds/day) for the criteria pollutants during construction and operation of a project. While incremental regional air quality impacts of an individual project are generally very small and difficult to measure, SCAQMDs regional maximum emission thresholds set standards to reduce the burden of SCAQMD to attain and maintain ambient air quality standards. The regional thresholds apply to the criteria pollutants mentioned above and can be found in Table 2: *Regional Construction Emissions Estimates* and Table 3: *Regional Operational Emissions Estimates* along with the CalEEMod project's emissions. These emission thresholds include the project emissions generated both from onsite sources (such as off-road construction equipment and fugitive dust) and offsite sources (vehicles traveling to and from the site). The grading phase is estimated to have 7,210 cubic yards of soil export. As seen in Table 2 and Table 3, emissions would be below SCAQMD thresholds and the project would have less than significant regional air quality impacts.

Table 2. Regional Construction Emission Estimates

Construction Activity	Maximum Daily Regional Emissions (pounds/day)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
2023						
Demolition	2.9	27.5	24.6	0.0	1.3	1.1
Site Prep	4.0	39.8	36.7	0.1	6.9	4.3
Grading	3.9	40.0	33.4	0.1	4.2	2.5
Building Construction	1.6	13.4	17.6	0.0	0.7	0.6
Maximum Daily Emissions	4.0	40.0	36.7	0.1	6.9	4.3
2024						
Building Construction	1.3	12.2	14.2	0.0	0.5	0.5
Paving	0.9	7.8	10.0	0.0	0.4	0.4
Architectural Coating	66.7	1.2	1.5	0.0	0.0	0.0
Maximum Daily Emissions	66.7	12.2	14.2	0.0	0.5	0.5
Maximum Daily Emission 2023-2024	66.7	40.0	36.7	0.1	6.9	4.3
SCAQMD Significance Thresholds	*75*	100	*550*	150	150	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Table 3. Regional Operational Emission Estimates

Operational Activity	Maximum Daily Regional Emissions (pounds/day)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Mobile	*7.5*	3.1	27.0	0.1	2.0	0.4
Area	*5.0*	*1.7*	6.1	0.0	0.1	0.1
Energy	0.1	0.9	0.4	0.0	0.1	0.1
Total Project Operational Emissions	12.5	5.6	33.5	0.1	2.2	0.6
SCAQMD Significance Thresholds	*55*	*55*	*550*	150	150	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

[1] SCAQMD April 2019. Found on 9/3/2020 at http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf

Local Emissions

Localized significance thresholds (LSTs) were also adopted by the SCAQMD due to project-related construction or operational air emissions having the potential to exceed the state and national air quality standards in the project vicinity, while not exceeding the regional emission significance thresholds adopted by the SCAQMD. These thresholds set the maximum rates of daily construction or operational emissions from a project site that would not exceed a national or State ambient air quality standard[2]. The differences between regional thresholds and LSTs are as follows:

1. Regional thresholds include all sources of project construction and operational emissions generated from onsite and offsite emission sources whereas the LSTs only consider the emissions generated from onsite emission sources.
2. LSTs only apply to CO, NO_x, PM_{10}, and $PM_{2.5}$, while regional thresholds include both ROG and SO_x.
3. Regional Thresholds apply to emission sources located anywhere within the SCAQMD whereas the LSTs are location dependent and also depend on the size of the project, and emission location relative to the nearest sensitive receptor.

A sensitive receptor is defined as an individual who is most susceptible to negative health affects when exposed to air pollutants including children, the elderly, and adults with chronic health issues. Such receptors include residences, schools, elderly care centers, and hospitals. SCAQMD provides screening look up tables (Appendix C of the SCAQMD 2008 Final Localized Significance Threshold Methodology)[3] for projects that disturb less than or equal to 5 acres in size in a day. These tables were created to easily determine if the daily emissions of NO_x, CO, PM_{10}, and $PM_{2.5}$ from a project could result in a significant impact to the local air quality. The thresholds are determined by:

- Source receptor area (SRA), the geographic area within the SCAQMD that can act as both a source of emissions and a receptor of emission impacts (project is located within SRA 23, Metropolitan Riverside County),
- Size of the project,
- Distance to the nearest sensitive receptor.

The phase with the most ground disturbance would be the grading phase, which would grade 3.5 acres per day[4]. The thresholds between 2 acres and 5 acres from Appendix C were interpolated as the tables give thresholds for 2-acre and 5-acre sites. Distance to the nearest sensitive receptor also determines the emission thresholds. The sensitive receptors closest to the project include residential along the northeast and northwest portion of the project site, about 50 feet and 5 feet respectively. These receptors (distance from the project property line to the residential structure) are less than the minimum distance provided in the lookup tables (25 meters). Therefore, 25 meters (82 feet) was used. Table 4: *Localized Construction Emission Estimates* shows the thresholds and estimated maximum daily construction emissions for the proposed project. As seen in Table 4, the proposed project has a less then significant localized construction air quality impact.

[2] SCAQMD 2008: Final Localized Significance Threshold Methodology. Referenced at http://www.aqmd.gov/docs/defaultsource/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf

[3] SCAQMD 2008: Final Localized Significance Threshold Methodology Appendix C. Referenced at http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf?sfvrsn=2

[4] SCAQMD Fact Sheet for Applying CalEEMod to Localized Significance Thresholds. Referenced at http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf

Table 4. Localized Construction Emission Estimates

Construction Activity	Maximum Daily Regional Emissions (pounds/day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
2023				
Demolition	27.3	23.5	1.3	1.1
Site Prep	39.7	35.5	6.9	4.3
Grading	37.3	31.4	4.0	2.4
Building Construction	12.8	14.3	0.6	0.6
Maximum Daily Emissions	39.7	35.5	6.9	4.3
2024				
Building Construction	12.2	14.2	0.5	0.5
Paving	7.8	10.0	0.4	0.4
Architectural Coating	1.2	1.5	0.0	0.0
Maximum Daily Emissions	12.2	14.2	0.5	0.5
Maximum Daily Emission 2023-2024	39.7	35.5	6.9	4.3
SCAQMD Significance Thresholds	220	1,230	10	6
Threshold Exceeded?	**No**	**No**	**No**	**No**

According to the SCAQMD LST methodology, LSTs apply to project stationary mobile sources. Projects that involve mobile sources that spend long periods queuing and idling at a site, such as transfer facilities or warehousing and distribution buildings, have the potential to exceed the operational localized significance thresholds. The proposed project would operate 96 residential units, which do not involve vehicles idling or queueing for long periods. Therefore, due to the lack of significant stationary source emissions, impacts related to operational localized significance thresholds would be less than significant.

Energy

The State CEQA Guidelines do not have specific thresholds for Energy consumption. Rather, the question in Appendix G: VI Energy (a) asks, "[Does the proposed project] Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction or operation?". Therefore, for the purpose of this analysis, a significant impact would occur if:

- The Project design and/or location encourages wasteful, inefficient, and unnecessary consumption of energy, especially fossil fuels such as coal, natural gas, and petroleum, as well as the use of fuel by vehicles anticipated to travel to and from the project.

The following assumptions were used to calculate the energy consumption of the proposed project:

- The project's construction and operational electricity consumption would be provided by Southern California Edison Company.
- Construction equipment fuel consumption derived from ARB Offroad2021 emission model
- Fuel Consumption from vehicle travel derived from ARB EMFAC2021 emission model
- Electrical and natural gas usage derived from the CalEEMod model

Construction

Electricity and Natural Gas Usage:

Due to the project size and the fact that construction is temporary, the electricity used would be substantially less than that required for project operation and would have a negligible contribution to the project's overall energy consumption. The electric power used would be for as-necessary lighting and electronic equipment such as computers inside temporary construction trailers. Natural gas is not anticipated to be needed for construction activities. Any consumption of natural gas would be minor and negligible in comparison to the operation of the proposed project.

Petroleum Fuel Usage:

The construction equipment associated with construction activities (off-road/heavy duty vehicles) would rely on diesel fuel as would vendor and haul trucks involved in delivering building materials and removing the demolition debris from the project site. Construction workers would travel to and from the project site throughout the duration of construction, and for a conservative analysis it is assumed that construction workers would travel in gasoline-powered passenger vehicles.

Table 5: C*onstruction Equipment Fuel Usage*, used the total fuel consumption and horsepower-hour data contained within the ARB OffRoad2021 emission model for specific types of diesel construction equipment. It should be noted that the total fuel consumption is a conservative analysis and would likely overstate the amount of fuel usage, as specific construction equipment is not expected to operate during the duration of the construction activity (i.e., crane). Table 6: *Estimate Project Vehicle Fuel Usage*, summarizes the project's construction vehicle fuel usage based on vehicle miles traveled and fuel usage factors contained in the ARB EMFAC2021. The trips included are worker vehicles, vendor vehicles, and haul vehicles. Table 8: *Total C*onstruction Fuel Usage*, shows the overall fuel consumption for construction of the proposed project.

Table 5. Construction Equipment Fuel Usage

Activity	Equipment	Number	Hours per day	Horse-power	Load Factor	Days of Construction	Total Horsepower-hours	Fuel Rate (gal/hp-hr)	Fuel Use (gallons)
Demolition	Concrete/Industrial Saws	1	8	33	0.73	10	1,927	0.04191588	81
	Rubber Tired Dozers	3	8	36	0.38	10	3,283	0.01986844	65
	Tractors/Loaders/Backhoes	2	8	367	0.4	10	23,488	0.02061516	484
Site Preparation	Rubber Tired Dozers	3	8	367	0.4	10	35,232	0.02061516	726
	Tractors/Loaders/Backhoes	4	8	84	0.37	10	9,946	0.01915595	191
Grading	Excavator	2	8	36	0.38	30	6,566	0.01986844	130
	Graders	1	8	148	0.41	30	14,563	0.02116786	308
	Rubber Tired Dozers	1	8	367	0.4	30	35,232	0.02061516	726
	Scraper	2	8	423	0.48	30	97,459	0.02500758	2,437
	Tractors/Loaders/Backhoes	2	8	84	0.37	30	14,918	0.01915595	286
Building Construction	Cranes	1	8	367	0.29	300	255,432	0.01489692	3,805
	Forklifts	3	8	82	0.2	300	118,080	0.01044404	1,233
	Generator Sets	1	8	14	0.74	300	24,864	0.05794744	1,441
	Tractors/Loaders/Backhoes	3	8	84	0.37	300	223,776	0.01915595	4,287
	Welder	1	8	46	0.45	300	49,680	0.02841202	1,412
Paving	Pavers	2	8	81	0.42	20	10,886	0.0215369	234
	Paving Equipment	2	8	89	0.36	20	10,253	0.01846541	189
	Rollers	2	8	36	0.38	20	4,378	0.01983745	87
Architectural Coating	Air Compressors	1	8	37	0.48	20	2,842	0.02864534	81
								Total	**22,135**

Table 6. Estimated Project Vehicle Fuel Usage

Construction Source	Number*	VMT	Fuel Rate	Gallons of Diesel Fuel	Gallons of Gasoline Fuel
Haul Trucks	366	7,320	6.04	1,212	0
Vendor Trucks	10	30,600	8.93	3,428	0
Worker Vehicles	95	216,820	25.33	0	8,184
Total				**4,640**	**8,184**

*Haul trip number shows total trips, while vendor and worker trip numbers show daily trips

Table 7. Total Construction Fuel Usage

Construction Source	Gallons of Diesel Fuel	Gallons of Gasoline Fuel
Construction Vehicles	4,640	1,064
Off-road Construction Equipment	17,573	0
Total	**22,213**	**1,064**

Operation

The operation of the proposed project would consume electricity, natural gas, and petroleum. The yearly energy consumption can be found in Table 9: *Project Annual Operational Energy Requirements*, below. Electricity and natural gas consumption were found in the Annual CalEEMod Output Sheets attached. The gasoline consumption rates utilize the same assumptions that were used for the worker vehicles.

Table 8. Project Annual Operational Energy Requirements

Operational Source	Energy Usage	
Electricity (Kilowatt-Hours)		
Project	896,567	
Natural Gas (Thousands British Thermal Units)		
Project	3,414,174	
Petroleum (gasoline) Consumption		
	Annual VMT	Gallons of Gasoline Fuel
Project	2,483,526	93,741

Conclusion

The proposed project has no unusual characteristics that would make the fuel and energy consumption associated with construction of the project less efficient compared with other similar construction sites throughout the state. The consumption would also be temporary and localized. Operation of the 96 residences would comply with all the energy efficiency requirements under Title 24 and all applicable County business and energy codes ordinances. Therefore, the construction and operation of the project would result in a less than significant impact for and would not result in inefficient, wasteful, or unnecessary energy use. No mitigation would be required.

Greenhouse Gas

SCAQMD has convened a Greenhouse Gas Emissions (GHG) CEQA Significance Threshold Working Group to help lead agencies determine significance thresholds for GHG emissions when SCAQMD is not the lead agency. The last working group was held September 2010 (Meeting No. 15)[5] and proposed a tiered approach, equivalent to the existing consistency determination requirements in CEQA Guidelines Sections 15064(h)(3), 15125(d), or 15152(a). The most recent proposal issued in Meeting No. 15 uses a tiered approach, Tier 1 to Tier 5, to evaluate potential GHG impacts from various uses. This assessment will apply

[5] SCAQMD 2010. Minutes of the GHG CEQA Significance Threshold Stakeholder Working Group #15. Referenced on 9/21/2020 at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf

the Tier 3: Numerical Screening Thresholds approach. Tier three consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project impact would be is less than significant:

- Option 1: All land use types: 3,000 MT CO_2e per year
- Option 2: Based on land use type: residential: 3,500 MT CO_2e per year; commercial: 1,400 MT CO_2e per year; or mixed use: 3,000 MT CO_2e per year

Executive Order S-3-05's year 2050 goal is the basis of SCAQMD' draft Tier 3 screening level thresholds. The objective of the Executive Order is to contribute to capping worldwide CO_2 concentrations at 450 ppm, stabilizing global climate change. The City of Riverside utilizes Option 1, and therefore the threshold is 3,000 MT CO_2e per year.

The project's construction GHG emissions are shown in Table 10: *Project Construction GHG Emissions*, and the overall construction and operational emissions are shown in Table 11: *Project Total GHG Emissions*. These emissions were calculated using the CalEEMod Model. The construction emissions are amortized over 30 years. As shown in Table 11, the project GHG emissions are 1,570 MT CO_2e per year, below the 3,000 MT CO_2e per year. Therefore, the project would have a less than significant GHG impact.

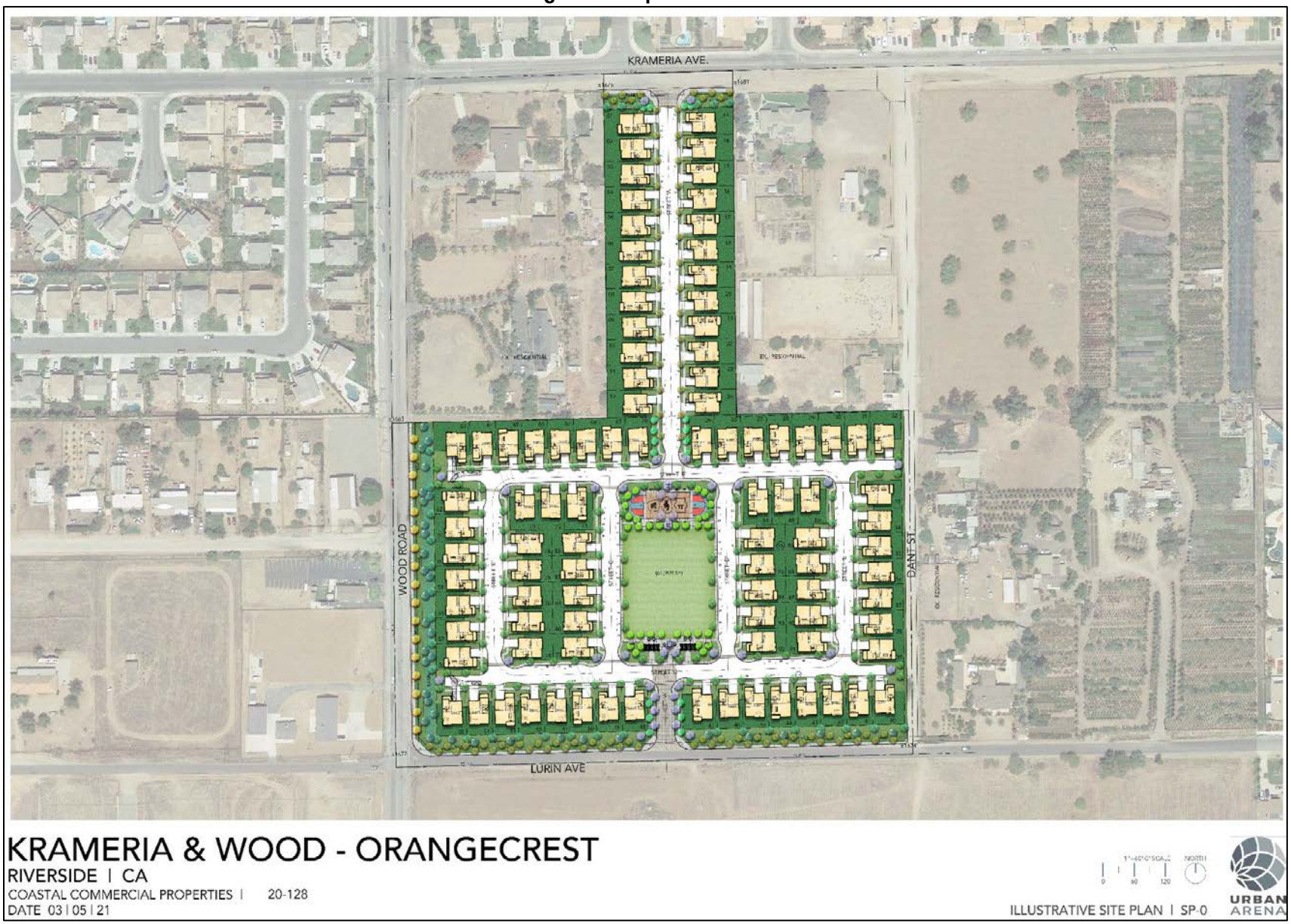
Table 9. Project Construction GHG Emissions

Activity	Annual GHG Emissions ($MTCO_2e$)
2023	498
2024	121
Total Emissions	619
Total Emissions Amortized Over 30 Years	21

Table 10. Project Total GHG Emissions

Activity	Annual GHG Emissions ($MTCO_2e$)
Project Operational Emissions	
Mobile	955
Area	25
Energy	502
Water	58
Waste	9
Refrigeration	0
Total Project Gross Operation Emissions	1,549
Project Construction Emissions	21
Total Emissions	1,570
Significance Threshold	3,000
Threshold Exceeded?	**No**

Figure 1: Project Site Plan



CalEEMod Output Sheets

Wood and Lurin Custom Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Wood and Lurin
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	9.00
Location	33.877797516957585, -117.32974785646789
County	Riverside-South Coast
City	Riverside
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5475
EDFZ	11
Electric Utility	City of Riverside
Gas Utility	Southern California Gas

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Single Family Housing	96.0	Dwelling Unit	12.4	187,200	1,124,434	61,855	310	—
Other Asphalt Surfaces	6.57	Acre	6.57	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	66.7	13.4	17.5	0.03	1.14	0.68	3,492
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	4.04	40.0	36.7	0.07	7.14	4.34	9,132
Average Daily (Max)	—	—	—	—	—	—	—
Unmit.	4.06	12.9	14.2	0.02	1.29	0.77	3,007
Annual (Max)	—	—	—	—	—	—	—
Unmit.	0.74	2.36	2.59	< 0.005	0.24	0.14	498
Exceeds (Daily Max)	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	150	55.0	—
Unmit.	No	No	No	No	No	No	—
Exceeds (Average Daily)	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	150	55.0	—
Unmit.	No	No	No	No	No	No	—

2.2. Construction Emissions by Year, Unmitigated

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

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—
2023	1.55	13.4	17.5	0.03	1.14	0.68	3,492
2024	66.7	12.2	14.2	0.03	1.03	0.62	2,639
Daily - Winter (Max)	—	—	—	—	—	—	—
2023	4.04	40.0	36.7	0.07	7.14	4.34	9,132
2024	1.30	12.2	14.2	0.03	1.03	0.62	2,639
Average Daily	—	—	—	—	—	—	—
2023	1.40	12.9	14.2	0.02	1.29	0.77	3,007
2024	4.06	3.45	4.09	0.01	0.29	0.18	733
Annual	—	—	—	—	—	—	—
2023	0.26	2.36	2.59	< 0.005	0.24	0.14	498
2024	0.74	0.63	0.75	< 0.005	0.05	0.03	121

2.4. Operations Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	12.5	5.56	33.5	0.08	2.18	0.59	11,678
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	11.8	5.73	24.2	0.07	2.17	0.58	11,276
Average Daily (Max)	—	—	—	—	—	—	—
Unmit.	11.7	4.28	27.7	0.06	2.02	0.46	9,354
Annual (Max)	—	—	—	—	—	—	—
Unmit.	2.14	0.78	5.05	0.01	0.37	0.08	1,549
Exceeds (Daily Max)	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	150	55.0	—
Unmit.	No	No	No	No	No	No	—

Exceeds (Average Daily)	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	150	55.0	—
Unmit.	No	No	No	No	No	No	—
Exceeds (Annual)	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	—	3,000
Unmit.	—	—	—	—	—	—	No

2.5. Operations Emissions by Sector, Unmitigated

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

Sector	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Mobile	7.51	3.05	27.0	0.06	1.97	0.39	6,202
Area	4.98	1.65	6.10	0.01	0.13	0.13	2,038
Energy	0.05	0.86	0.37	0.01	0.07	0.07	3,035
Water	—	—	—	—	—	—	351
Waste	—	—	—	—	—	—	51.3
Refrig.	—	—	—	—	—	—	1.34
Total	12.5	5.56	33.5	0.08	2.18	0.59	11,678
Daily, Winter (Max)	—	—	—	—	—	—	—
Mobile	7.22	3.27	23.2	0.06	1.97	0.39	5,814
Area	4.49	1.59	0.68	0.01	0.13	0.13	2,023
Energy	0.05	0.86	0.37	0.01	0.07	0.07	3,035
Water	—	—	—	—	—	—	351
Waste	—	—	—	—	—	—	51.3
Refrig.	—	—	—	—	—	—	1.34
Total	11.8	5.73	24.2	0.07	2.17	0.58	11,276

Average Daily	—	—	—	—	—	—	—
Mobile	6.93	3.27	23.5	0.06	1.94	0.38	5,767
Area	4.74	0.15	3.76	< 0.005	0.01	0.01	149
Energy	0.05	0.86	0.37	0.01	0.07	0.07	3,035
Water	—	—	—	—	—	—	351
Waste	—	—	—	—	—	—	51.3
Refrig.	—	—	—	—	—	—	1.34
Total	11.7	4.28	27.7	0.06	2.02	0.46	9,354
Annual	—	—	—	—	—	—	—
Mobile	1.26	0.60	4.30	0.01	0.35	0.07	955
Area	0.87	0.03	0.69	< 0.005	< 0.005	< 0.005	24.6
Energy	0.01	0.16	0.07	< 0.005	0.01	0.01	502
Water	—	—	—	—	—	—	58.1
Waste	—	—	—	—	—	—	8.50
Refrig.	—	—	—	—	—	—	0.22
Total	2.14	0.78	5.05	0.01	0.37	0.08	1,549

3. Construction Emissions Details

3.1. Demolition (2023) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	2.84	27.3	23.5	0.03	1.20	1.10	3,437
Demolition	—	—	—	—	0.09	0.01	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.08	0.75	0.64	< 0.005	0.03	0.03	94.2
Demolition	—	—	—	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.14	0.12	< 0.005	0.01	0.01	15.6
Demolition	—	—	—	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.08	0.09	1.03	0.00	0.01	0.00	205
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.09	0.02	< 0.005	0.01	< 0.005	74.4
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	< 0.005	0.00	5.70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.04
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	0.00	0.94
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.34

3.3. Site Preparation (2023) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e

Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	3.95	39.7	35.5	0.05	1.81	1.66	5,314
Dust From Material Movement	—	—	—	—	5.11	2.63	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.11	1.09	0.97	< 0.005	0.05	0.05	146
Dust From Material Movement	—	—	—	—	0.14	0.07	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.20	0.18	< 0.005	0.01	0.01	24.1
Dust From Material Movement	—	—	—	—	0.03	0.01	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.09	0.11	1.20	0.00	0.01	0.00	239
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	< 0.005	0.00	6.65
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	0.00	1.10

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Grading (2023) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	3.72	37.3	31.4	0.06	1.59	1.47	6,621
Dust From Material Movement	—	—	—	—	2.40	0.95	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.31	3.07	2.58	0.01	0.13	0.12	544
Dust From Material Movement	—	—	—	—	0.20	0.08	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.56	0.47	< 0.005	0.02	0.02	90.1
Dust From Material Movement	—	—	—	—	0.04	0.01	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.10	0.12	1.37	0.00	0.02	0.00	273
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.03	2.56	0.60	0.01	0.19	0.09	2,238
Average Daily	—	—	—	—	—	—	—
Worker	0.01	0.01	0.12	0.00	< 0.005	0.00	22.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.21	0.05	< 0.005	0.02	0.01	184
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	0.00	3.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.04	0.01	< 0.005	< 0.005	< 0.005	30.5

3.7. Building Construction (2023) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.36	12.8	14.3	0.03	0.60	0.55	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.36	12.8	14.3	0.03	0.60	0.55	2,639
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.78	7.42	8.28	0.01	0.35	0.32	1,529
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.35	1.51	< 0.005	0.06	0.06	253
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.18	0.18	3.13	0.00	0.03	0.00	516
Vendor	0.01	0.38	0.12	< 0.005	0.02	0.01	338
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.17	0.21	2.38	0.00	0.03	0.00	472
Vendor	0.01	0.39	0.12	< 0.005	0.02	0.01	337
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	0.10	0.12	1.44	0.00	0.02	0.00	278
Vendor	0.01	0.23	0.07	< 0.005	0.01	0.01	195
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	0.02	0.02	0.26	0.00	< 0.005	0.00	45.9
Vendor	< 0.005	0.04	0.01	< 0.005	< 0.005	< 0.005	32.3
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.9. Building Construction (2024) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.30	12.2	14.2	0.03	0.54	0.49	2,639
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.30	12.2	14.2	0.03	0.54	0.49	2,639
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.31	2.95	3.45	0.01	0.13	0.12	640

Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.54	0.63	< 0.005	0.02	0.02	106
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—

3.11. Paving (2024) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.85	7.81	10.0	0.01	0.39	0.36	1,517
Paving	0.86	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.43	0.55	< 0.005	0.02	0.02	83.1
Paving	0.05	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.08	0.10	< 0.005	< 0.005	< 0.005	13.8
Paving	0.01	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—

3.13. Architectural Coating (2024) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.18	1.21	1.53	< 0.005	0.04	0.04	179
Architectural Coatings	66.5	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.08	< 0.005	< 0.005	< 0.005	9.79
Architectural Coatings	3.65	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	1.62
Architectural Coatings	0.67	—	—	—	—	—	—
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—
Single Family Housing	7.51	3.05	27.0	0.06	0.37	0.14	6,202
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.51	3.05	27.0	0.06	0.37	0.14	6,202
Daily, Winter (Max)	—	—	—	—	—	—	—
Single Family Housing	7.22	3.27	23.2	0.06	0.37	0.14	5,814
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	7.22	3.27	23.2	0.06	0.37	0.14	5,814
Annual	—	—	—	—	—	—	—
Single Family Housing	1.26	0.60	4.30	0.01	0.07	0.03	955
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.26	0.60	4.30	0.01	0.07	0.03	955

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	1,938
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	1,938
Daily, Winter (Max)	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	1,938
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	1,938
Annual	—	—	—	—	—	—	—

Single Family Housing	—	—	—	—	—	—	321
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	321

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Single Family Housing	0.05	0.86	0.37	0.01	0.07	0.07	1,097
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.05	0.86	0.37	0.01	0.07	0.07	1,097
Daily, Winter (Max)	—	—	—	—	—	—	—
Single Family Housing	0.05	0.86	0.37	0.01	0.07	0.07	1,097
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.05	0.86	0.37	0.01	0.07	0.07	1,097
Annual	—	—	—	—	—	—	—
Single Family Housing	0.01	0.16	0.07	< 0.005	0.01	0.01	182
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.16	0.07	< 0.005	0.01	0.01	182

4.3. Area Emissions by Source

4.3.2. Unmitigated

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

Source	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Architectural Coatings	66.9	—	—	—	—	—	—

Hearths	0.09	1.59	0.68	0.01	0.13	0.13	2,023
Consumer Products	4.03	—	—	—	—	—	—
Landscape Equipment	0.50	0.05	5.43	< 0.005	< 0.005	< 0.005	14.6
Total	71.5	1.65	6.10	0.01	0.13	0.13	2,038
Daily, Winter (Max)	—	—	—	—	—	—	—
Hearths	0.09	1.59	0.68	0.01	0.13	0.13	2,023
Consumer Products	4.03	—	—	—	—	—	—
Architectural Coatings	0.36	—	—	—	—	—	—
Total	4.49	1.59	0.68	0.01	0.13	0.13	2,023
Annual	—	—	—	—	—	—	—
Architectural Coatings	0.73	—	—	—	—	—	—
Hearths	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	22.9
Consumer Products	0.74	—	—	—	—	—	—
Landscape Equipment	0.06	0.01	0.68	< 0.005	< 0.005	< 0.005	1.66
Total	1.53	0.03	0.69	< 0.005	< 0.005	< 0.005	24.6

4.4. Water Emissions by Land Use

4.4.2. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	351
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	351
Daily, Winter (Max)	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	351

Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	351
Annual	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	58.1
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	58.1

4.5. Waste Emissions by Land Use

4.5.2. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	51.3
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	51.3
Daily, Winter (Max)	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	51.3
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	51.3
Annual	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	8.50
Other Asphalt Surfaces	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	8.50

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	1.34
Total	—	—	—	—	—	—	1.34
Daily, Winter (Max)	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	1.34
Total	—	—	—	—	—	—	1.34
Annual	—	—	—	—	—	—	—
Single Family Housing	—	—	—	—	—	—	0.22
Total	—	—	—	—	—	—	0.22

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

Vegetation	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e

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

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

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

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

Species	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—

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

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Demolition	Demolition	1/2/2023	1/13/2023	5.00	10.0	—
Site Preparation	Site Preparation	1/14/2023	1/27/2023	5.00	10.0	—
Grading	Grading	1/28/2023	3/10/2023	5.00	30.0	—
Building Construction	Building Construction	3/11/2023	5/3/2024	5.00	300	—
Paving	Paving	5/4/2024	5/31/2024	5.00	20.0	—

Architectural Coating	Architectural Coating	6/1/2024	6/28/2024	5.00	20.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Demolition	Concrete/Industrial Saws	Diesel	Average	1.00	8.00	33.0	0.73
Demolition	Excavators	Diesel	Average	3.00	8.00	36.0	0.38
Demolition	Rubber Tired Dozers	Diesel	Average	2.00	8.00	367	0.40
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Building Construction	Cranes	Diesel	Average	1.00	8.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	8.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	8.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	8.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Demolition	—	—	—	—
Demolition	Worker	15.0	18.5	LDA,LDT1,LDT2
Demolition	Vendor	—	10.2	HHDT,MHDT
Demolition	Hauling	1.00	20.0	HHDT
Demolition	Onsite truck	—	—	HHDT
Site Preparation	—	—	—	—
Site Preparation	Worker	17.5	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	20.0	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	30.1	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	34.6	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	10.3	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT

Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	6.91	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	379,080	126,360	12,879	4,293	17,171

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (Building Square Footage)	Acres Paved (acres)
Demolition	0.00	0.00	0.00	862	—
Site Preparation	—	—	15.0	0.00	—
Grading	7,210	—	90.0	0.00	—
Paving	0.00	0.00	0.00	0.00	7.63

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	3	74%	74%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Single Family Housing	1.06	0%
Other Asphalt Surfaces	6.57	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2023	0.00	787	0.03	< 0.005
2024	0.00	787	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Single Family Housing	905	910	814	325,922	6,898	6,935	6,203	2,483,526
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Single Family Housing	—
Wood Fireplaces	0
Gas Fireplaces	96
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	0
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
379080	126,360	12,879	4,293	17,171

5.10.3. Landscape Equipment

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

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Single Family Housing	896,567	787	0.0330	0.0040	3,414,174
Other Asphalt Surfaces	0.00	787	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Single Family Housing	3,904,682	22,771,392
Other Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Single Family Housing	27.2	0.00
Other Asphalt Surfaces	0.00	0.00

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Single Family Housing	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0

Single Family Housing	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

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

5.17. User Defined

Equipment Type	Fuel Type
—	—

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

8. User Changes to Default Data

Screen	Justification
Land Use	Lot Acreage based on Project site plan.
Construction: Construction Phases	Demolition reduced to one week due to size of existing structures.
Construction: Off-Road Equipment	Assumed 8hr work day.
Operations: Vehicle Data	Updated rates to ITE 11th Edition.
Operations: Hearths	SCAQMD Rule 445, no wood stoves. Assumed 100% of homes have gas fireplace for conservative analysis.

Fuel Equations

Model Output: OFFROAD2021 (v1.0.2) Emissions Inventory
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2022
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Year	VehClass	MdlYr	HP_Bin	Fuel	Fuel Consumption	Horsepower Hours	Fuel Rate
Riverside (SC)	2023	Construction and Mining - Misc - Concrete/Industrial Saws	Aggregate	Aggregate	Diesel	1731.727284	41314.35	0.041916
Riverside (SC)	2023	Construction and Mining - Excavators	Aggregate	Aggregate	Diesel	3247317.47	163441028	0.019868
Riverside (SC)	2023	Construction and Mining - Rubber Tired Dozers	Aggregate	Aggregate	Diesel	360334.0187	17479083.63	0.020615
Riverside (SC)	2023	Construction and Mining - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	4521005.952	236010561.3	0.019156
Riverside (SC)	2023	Construction and Mining - Graders	Aggregate	Aggregate	Diesel	1219588.655	57615102.54	0.021168
Riverside (SC)	2023	Construction and Mining - Scrapers	Aggregate	Aggregate	Diesel	3229123.299	129125778.1	0.025008
Riverside (SC)	2023	Construction and Mining - Cranes	Aggregate	Aggregate	Diesel	730354.0108	49027176.74	0.014897
Riverside (SC)	2023	Industrial - Forklifts	Aggregate	Aggregate	Diesel	333090.6053	31892893.65	0.010444
Riverside (SC)	2023	Light Commercial - Misc - Generator Sets	Aggregate	Aggregate	Diesel	102895.7496	1775673.9	0.057947
Riverside (SC)	2023	Light Commercial - Misc - Welders	Aggregate	Aggregate	Diesel	137716.0534	4847105.1	0.028412
Riverside (SC)	2023	Construction and Mining - Pavers	Aggregate	Aggregate	Diesel	216588.4678	10056621.98	0.021537
Riverside (SC)	2023	Construction and Mining - Paving Equipment	Aggregate	Aggregate	Diesel	126017.34	6824508.06	0.018465
Riverside (SC)	2023	Construction and Mining - Rollers	Aggregate	Aggregate	Diesel	561750.2216	28317658.57	0.019837
Riverside (SC)	2023	Light Commercial - Misc - Air Compressors	Aggregate	Aggregate	Diesel	28325.54399	988836.1	0.028645

Source: EMFAC2021 (v1.0.2) Emissions Inventory
Region Type: Sub-Area
Region: Riverside (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/year for CVMT and EVMT, trips/year for Trips, kWh/year for Energy Consumption, tons/year for Emissions, 1000 gallons/year for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	VMT	Fuel Consumption	Fuel Rate
Riverside (SC)	2023	HHDT	Aggregate	Aggregate	Diesel	583570327	96603.14331	6.04
Riverside (SC)	2023	MHDT	Aggregate	Aggregate	Diesel	173580543.8	19444.4315	8.93
Riverside (SC)	2023	LDA	Aggregate	Aggregate	Gasoline	7067158685	242806.6852	29.11
Riverside (SC)	2023	LDT1	Aggregate	Aggregate	Gasoline	535313348.3	22207.82689	24.10
Riverside (SC)	2023	LDT2	Aggregate	Aggregate	Gasoline	2926985988	123727.7759	23.66
					Passenger Car MPG:		50/25/25 Split	26.49

Wood and Lurin Residential Project

Estimates of Demolition Debris

Building Demolition

Building	Height(ft)	Area (ft2)	Volume (ft3)	Demo Building Volume (cy)		
All	20	821	16420	201		Note 1
Total		821	16420	201		Note 2
Weight of the Building Demolition Debris (ton/cy):					0.5	Note 3
Total Weight of Building Debris					**100**	**tons**

Note 1: Total square footage of existing building contained in the project description
Note 2: FEMA Debris Estimating Field Guide, FEMA 329. September 2010
Note 3: CalEEMod User Guide

Vehicle Trips

Haul Truck Capacity	20	tons
Number of Trucks	5	trucks
Number of Truck Trips	**10**	**truck trips**