VISTA ENVIRONMENTAL

September 17, 2020

Christine Saunders
Sagecrest Planning + Environmental
2400 E Katella Avenue, Suite 800
Anaheim, CA 92806

Subject: **City of Riverside Magnolia Flats Project Greenhouse Gas Technical Memorandum.**

Dear Ms. Saunders:

Vista Environmental has conducted an analysis to evaluate whether the proposed Magnolia Flats Project (proposed project) would cause significant greenhouse gas impacts. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the South Coast Air Quality Management District (SCAQMD) recommendations for quantification of emissions and evaluation of potential air quality and greenhouse gas impacts.

PURPOSE OF ANALYSIS

This GHG Memo has been prepared to determine the GHG impacts associated with the proposed Magnolia Flats Mixed-Use project (proposed project). The project site was analyzed in the *2014-2021 Housing Element Update Housing Implementation Plan Final Environmental Impact Report* (December 2017) and is eligible for infill streamlining pursuant to Public Resources Code Section 21094.5 and CEQA Guidelines Section 15183.3. The Mitigation Monitoring and Reporting Program included in the Housing Element Update FEIR included the following Mitigation Measure:

> **Mitigation Measure GHG-1 Greenhouse Gas Emissions**
> Prior to demolition, grading, or building permit approval, and in accordance with SCAQMD's promulgated methodology protocols, a Greenhouse Gas Emissions Assessment shall be prepared for multi-family residential developments that would exceed SCAQMD's tiered-approach requirements and the following SCAQMD thresholds of significance (or those in place at the time of the development application). Future development shall mitigate GHG emissions to below SCAQMD's thresholds of significance.
>
> - Residential Uses: 3,000 metric tons of CO2 equivalent per year (MTCO2eq/yr); **or**
> - Efficiency-Based (through Year 2020): 4.8 MTCO2eq per service population (SP) per year; or
> - Efficiency-Based (post Year 2020): 3.0 $MTCO_2eq/SP/year$.

The GHG Memo has been prepared to address the requirements detailed in Mitigation Measure GHG-1.

PROJECT DESCRIPTION

Site Location and Study Area

The project site is located in the western portion of the City of Riverside (City) at 10411 – 10491 Magnolia Avenue. The approximately 16.3 acre is the former location of a commercial retail center and the northern

portion of the project site is currently vacant and the southern portion of the project site is currently utilized as a parking lot. The project site is bounded by single-family homes to the north, commercial retail uses to the east, commercial retail uses and Magnolia Avenue to the south, and a mobile home park to the west. The project study area is shown in Figure 1.

Proposed Project Description

The proposed project consists of the development of a mixed-use project that would include a residential apartment complex with 450 residential units and a 9,000 square foot commercial component that is planned to be a food hall. Approximately 2.26 acres of common open space area would be provided that would include a dog park and tot lot on the northern portion of the project site, a pool and spa area in the central portion of the residential apartment complex, and a retail courtyard located between the two proposed commercial buildings. The proposed project would also include approximately 833 parking spaces located in several parking lots throughout the project site. The site plan is shown in Figure 2.

GHG EMISSIONS MODELING PROCEDURES

The GHG emissions impacts created by the proposed project have been analyzed through use of CalEEMod Version 2016.3.2. CalEEMod is a computer model published by the SCAQMD for estimating air pollutant emissions. The CalEEMod program uses the EMFAC2014 computer program to calculate the emission rates specific for the South Coast Air Basin portion of Riverside County for employee, vendor and haul truck vehicle trips and the OFFROAD2011 computer program to calculate emission rates for heavy equipment operations. EMFAC2014 and OFFROAD2011 are computer programs generated by CARB that calculates composite emission rates for vehicles. Emission rates are reported by the program in grams per trip and grams per mile or grams per running hour.

The project characteristics in the CalEEMod model were set to a project location of South Coast Air Basin portion of Riverside County, a Climate Zone of 10, utility company of City of Riverside Public Utilities. The CalEEMod model operational year of 2035 was selected, since that is the analysis year SCAQMD utilized for the development of the post year 2020 efficiency based target of 3.0 $MTCO_2eq/SP/year$.

Land Use Parameters

The proposed project consists of development of a 4-story building with 450 residential apartment units with 9,000 square feet of restaurant space with 847 parking spaces. The proposed project's land use parameters that were entered into the CalEEMod model are shown in Table A.

Table A – CalEEMod Land Use Parameters

Proposed Land Use	Land Use Subtype in CalEEMod	Land Use Size[1]	Lot Acreage[2]	Building/Paving[3] (square feet)
Residential Buildings	Apartment Mid Rise[4]	450 DU	7.65	450,000
Food Hall Commercial Space	High Turnover (Sit Down Restaurant)	9.0 TSF	0.5	9,000
Parking Lot	Parking Lot	847 PS	8.15	338,800

Notes:
[1] DU = Dwelling Unit; TSF = Thousand Square Feet; PS = Parking Space
[2] Lot acreage calculated based on the total project area of 16.3 acres.
[3] Building/Paving square feet represent area where architectural coatings will be applied.
[4] Apartment Mid Rise is defined as Mid-rise apartments in rental building that have between 3 and 10 levels.
Source: CalEEMod User's Guide (CAPCOA, 2017)

Electricity Emission Factors

The default CalEEMod emission factors for Riverside Public Utilities for the Reporting year of 2007 (CalEEMod User Guide Appendix D, Table 1.2) are as follows:

- Carbon dioxide: 1,326 pounds per megawatt-hour
- Methane: 0.029 pounds per megawatt-hour
- Nitrous oxide: 0.00617 pounds per megawatt-hour

According to the *City of Riverside Public Utilities 2018 Power Content Label* the Power Mix consisted of 34% renewable and 29% coal. The *2007 Power Content Label* found that the City's Power Mix consisted of 9% renewable and 68% coal. This equates to approximately a 51 percent reduction in GHG emissions between year 2018 and year 2007, which CalEEMod's default emission factors are based on. As such the CalEEMod default intensity factors have been reduced by 57 percent and the resultant intensity factors that have been utilized in this analysis are shown below:

- Carbon dioxide: 565.5 pounds per megawatt-hour
- Methane: 0.012 pounds per megawatt-hour
- Nitrous oxide: 0.003 pounds per megawatt-hour

It should be noted that the use of the above intensity factors is a conservative estimate as they are based on the year 2018 rates and by the year 2035, GHG emissions intensity factors are anticipated to be much lower.

Construction Parameters

Construction activities have been modeled based on the default construction schedule provided by CalEEMod for a project of this size and set for construction to be completed by the year 2022. This default construction schedule is based on the project being constructed over an 18 month period and starting June 2021. The construction-related GHG emissions were based on a 30-year amortization rate as recommended in the SCAQMD GHG Working Group meeting on November 19, 2009. The phases of construction activities that have been analyzed are detailed below and include: 1) Demolition, 2) Grading, 3) Building construction, 4) Application of architectural coatings, and 5) Paving. Since the project site is currently developed, the site preparation activities that consist of removal of rocks and tree stumps would not be required during construction of the proposed project.

Demolition

The demolition phase would consist of demolishing the existing parking lot, which totals approximately 3.8 acres of pavement (16,600 square feet). The pavement was assumed to be an average of 4-inches thick and weigh 145 pounds per square foot, which results in 4,000 tons of pavement that would be removed from the project site and would require a total of 396 haul truck trips (average 19.8 haul truck trips per day).

The demolition phase has been modeled as starting in January 2021 and occurring over four weeks. The demolition activities would require 15 worker trips per day. In order to account for water truck emissions, six vendor truck emissions were added to the demolition phase. The onsite equipment would consist of one concrete/industrial saw, three excavators and two rubber tired dozers, which is based on the

CalEEMod default equipment mix. The mitigation of water all exposed areas two times per day was chosen in order to account for the fugitive dust reduction that would occur through adhering to SCAQMD Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

Grading

The grading phase was modeled as starting after completion of the demolition phase and occurring over four weeks. According to the Grading Plan, the rough earthwork quantities for grading include 14,400 cubic yards of dirt imported to the project site. The import of dirt would require a total of 1,806 haul truck trips (average 90.3 haul truck trips per day).

The onsite equipment utilized during the grading phase was based on the CalEEMod default equipment list of two excavators, one grader, one rubber tired dozer, two scrapers, and two of either tractors, loaders, or backhoes. The grading activities would also generate 20 automobile trips per day for the workers. In order to account for water truck emissions, six daily vendor truck trips were added to the grading phase. The mitigation of water all exposed areas two times per day was chosen in order to account for the fugitive dust reduction that would occur through adhering to SCAQMD Rule 403, which requires that the Best Available Control Measures be utilized to reduce fugitive dust emissions.

Building Construction

The building construction would occur after the completion of the grading phase and was modeled as occurring over 14 months. The building construction phase would generate 470 worker trips and 105 vendor trips per day. The onsite equipment would consist of the simultaneous operation of one crane, three forklifts, one generator, one welder, and three of either tractors, loaders, or backhoes, which is based on the CalEEMod default equipment mix.

Paving

The paving phase was modeled as occurring after completion of the building construction phase and taking four weeks to complete. The paving phase would require up to 15 worker trips per day. The onsite equipment would consist of the simultaneous operation of two pavers, two paving equipment, two rollers, which is based on the CalEEMod default equipment mix.

Architectural Coating

The application of architectural coatings was modeled as occurring after completion of the paving phase and taking four weeks to complete. The architectural coating phase was modeled based on covering 911,250 square feet of residential interior area, 303,750 square feet of residential exterior area, 13,500 square feet of non-residential interior area, 4,500 square feet of non-residential exterior area, and 20,328 square feet of parking area. The architectural coating phase would generate 94 worker trip per day. The onsite equipment would consist of one air compressor, which is based on the CalEEMod default equipment mix.

Operational Emissions Modeling

The operations-related criteria air pollutant emissions and GHG emissions created by the proposed project have been analyzed through use of the CalEEMod model. The proposed project was analyzed in the CalEEMod model based on the land use parameters provided above.

Mobile Sources

Mobile sources include emissions the additional vehicle miles generated from the proposed project. According to the *Magnolia Flats Project Focused Traffic Analysis* (Traffic Analysis), prepared by EPD Solutions, December 20, 2019, the proposed project would generate 4,756 net daily vehicle trips. The project daily trips rates entered into the CalEEMod model is shown in Table B.

Table B – Project Daily Trip Rates and Total Project Generated Trips

CalEEMod Land Use	Land Use Size[1]	Daily Trip Rate[2]	ADT
Apartment Mid Rise[4]	450 DU	4.9	2,203
High Turnover (Sit Down Restaurant)	9.0 TSF	283.67	2,553
Parking Lot	847 PS	0.00	0
Total Project Trips per Day		--	**5,040**

Notes:
[1] DU = Dwelling Units; TSF = Thousand Square Feet; PS = Parking Space.
[2] Daily trip rate obtained from the Traffic Impact Analysis (EPD Solutions, 2019)

According to *Final Report Residential Trip Generation: Ground Counts* (Virginia Transportation Research Council, 2003, found at: http://www.virginiadot.org/vtrc/main/online_reports/pdf/03-r18.pdf), which analyzed the generation of trips for residential homes found that the combined category of Trucks, Visitors and Miscellaneous generated 0.5 vehicle trips per dwelling unit. Since this category is based on three sub-categories (i.e., trucks, visitors and miscellaneous), it was assumed that each of these subcategories generated similar trips, which would result in the 450 dwelling units generating 74 daily truck trips. No changes were made to the high turnover restaurant land use vehicle mix or any of the other CalEEMod default mobile source parameters.

The mobile source emissions analysis included the CalEEMod mitigation of increase density to 27.6 dwelling units per acre, improved pedestrian network onsite and connecting offsite, since the proposed project would include construction of an onsite pedestrian network that would connect to the existing sidewalks. In addition, the CalEEMod mitigation of increase transit accessibility was also selected in order to account for Riverside Transit Bus Stop Magnolia FS Bradbury that has a bus stop on Magnolia Avenue adjacent to the project site approximately (0.02 mile) south of the project site.

Area Sources

Area sources include emissions from consumer products, landscape equipment, hearths and architectural coatings. The area source emissions were based on the on-going use of the proposed project in the CalEEMod model. According to the proposed project plans, no fireplaces or wood stoves would be installed into the proposed residential apartment units. As such the CalEEMod model was set to zero fireplaces and woodstoves. No other changes were made to the default area source parameters in the CalEEMod model.

Energy Usage

Energy usage includes emissions from electricity and natural gas used onsite. The energy usage was based on the ongoing use of the proposed project in the CalEEMod Model. No changes were made to the default energy usage parameters in the CalEEMod model.

The new 2019 Title 24, Part 6 building energy efficiency standards go into effect January 1, 2020 and will be required by the time the applicant obtains the building permits for the proposed project. The 2019 Title 24, Part 6 standards have been developed so that the average new home built in California will have zero-net-energy use. In order to account for the new 2019 Title 24, Part 6 standards, this analysis included the CalEEMod mitigation of exceed the 2016 Title 24 standards by 7 percent, since the 2019 building standards have been calculated to result in new homes using about 7 percent less energy than homes built with the 2016 building standards and 30 percent less lighting energy usage (https://www.energy.ca.gov/title24/2019standards/documents/2018_Title_24_2019_Building_Standards_FAQ.pdf

Solid Waste

Waste includes the GHG emissions associated with the processing of waste from the proposed project as well as the GHG emissions from the waste once it is interred into a landfill. The analysis was based on the default CalEEMod waste generation rates of 314 tons of solid waste per year generated from the proposed project. No changes were made to the default solid waste parameters or mitigation measures in the CalEEMod model.

The CalEEMod mitigation of a 50 percent reduction in landfill waste was selected to account for implementation of AB 341 that provides strategies to reduce, recycle or compost solid waste by 75 percent by 2020. Only 50 percent was selected, since AB 341 builds upon the waste reduction measures of SB 939 and 1374 and therefore, it was assumed approximately 25 percent of the waste reduction target has already been accounted for in the CalEEMod model.

Water and Wastewater

Water includes the water used for the interior of the buildings as well as for landscaping and is based on the GHG emissions associated with the energy used to transport and filter the water. The analysis was based on the default CalEEMod water usage rate of 32,051,115 gallons per year of indoor water use and 18,658,284 gallons per year of outdoor water use. No changes were made to the default water and wastewater parameters in the CalEEMod model.

The CalEEMod mitigation of the use of low flow faucets, showers, and toilets and use of smart irrigation system controllers were selected to account for the implementation of the 2016 CCR Title 24 Part 11 (CalGreen) requirements.

IMPACT ANALYSIS

The project's GHG emissions have been calculated with the CalEEMod model with the input parameters detailed above and the results is shown below in Table C.

Table C – Proposed Project Annual Greenhouse Gas Emissions

Category	Greenhouse Gas Emissions (Metric Tons per Year)			
	CO_2	CH_4	N_2O	CO_2e
Area Sources[1]	7.60	0.01	0.00	7.78
Energy Usage[2]	1,088.89	0.02	0.01	1,092.98
Mobile Sources[3]	2,211.44	0.09	0.00	2,213.81
Solid Waste[4]	31.88	1.88	0.00	78.98
Water and Wastewater[5]	143.70	0.84	0.02	170.76
Construction[6]	52.10	0.01	0.00	52.25
Total GHG Emissions	3,535.61	2.85	0.03	3,616.56
			Service Population	1,287
			GHG Emission per Service Population	**2.81**
			Mitigation Measure GHG-1 for post year 2020	**3.0**
			Exceed Thresholds?	**No**

Notes:
[1] Area sources consist of GHG emissions from consumer products, architectural coatings, and landscaping equipment.
[2] Energy usage consists of GHG emissions from electricity and natural gas usage.
[3] Mobile sources consist of GHG emissions from vehicles.
[4] Waste includes the CO_2 and CH_4 emissions created from the solid waste placed in landfills.
[5] Water includes GHG emissions from electricity used for transport of water and processing of wastewater.
[6] Construction emissions amortized over 30 years as recommended in the SCAQMD GHG Working Group on November 19, 2009.
Source: CalEEMod Version 2016.3.2.

The data provided in Table C above shows that the proposed project would create 3,616.56 $MTCO_2e$ per year, which would create 2.81 $MTCO_2e$ per year per service population. According to Mitigation Measure GHG-1 for post year 2020 projects, the proposed project is required to create 3.0 $MTCO_2e$ per year or less. As such, the proposed project is in compliance with Mitigation Measure GHG-1.

Please let me know if you have any questions or need additional information with regard to the above analysis. I can be reached at (949) 510-5355, or email me at greg@vistalb.com.

Sincerely,

Greg Tonkovich, AICP
Senior Analyst
Vista Environmental
949 510 5355

Encl.: CalEEMod Model Printouts

Magnolia Flats

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	847.00	Space	8.15	338,800.00	0
High Turnover (Sit Down Restaurant)	9.00	1000sqft	0.50	9,000.00	0
Apartments Mid Rise	450.00	Dwelling Unit	7.65	450,000.00	1287

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2035
Utility Company	Riverside Public Utilities				
CO2 Intensity (lb/MWhr)	565.5	**CH4 Intensity (lb/MWhr)**	0.012	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Magnolia Flats - Riverside-South Coast County, Annual

Project Characteristics - Riverside Public Utilities adjusted to account for 2018 Power Content Label

Land Use - Total project site 16.3 acres

Construction Phase -

Trips and VMT - 6 Vendor Trips added to account for water truck emissions.

Demolition - Demolition of existing parking lot - 4,000 ton of debris

Grading - 11650 cubic yards imported during grading

Vehicle Trips - Trip Generation Rates from Traffic Report

Woodstoves - No Fireplaces

Energy Use -

Mobile Land Use Mitigation - Increased Density to 27.6 du/acre; 0.02 mile to Riverside Transit Magnolia FS Bandbury; Improved Ped Network on site and connecting off site

Energy Mitigation - Exceed Title 24 by 7% and lighting energy by 30% selected to account for the 2019 Title 24 standards.

Water Mitigation - Install Low-flow faucets and Water-Efficient Irrigation Systems

Waste Mitigation - 50% reduction in waste selected to account for AB 341

Fleet Mix - Apartment Fleet Mix adjusted to 74 truck trips a day

Table Name	Column Name	Default Value	New Value
tblFireplaces	NumberGas	382.50	0.00
tblFireplaces	NumberNoFireplace	45.00	450.00
tblFireplaces	NumberWood	22.50	0.00
tblFleetMix	HHD	0.07	0.01
tblFleetMix	LDA	0.57	0.60
tblFleetMix	LDT1	0.03	0.04
tblFleetMix	LDT2	0.19	0.20
tblFleetMix	LHD1	9.2110e-003	8.0000e-003
tblFleetMix	LHD2	4.0320e-003	2.0000e-003
tblFleetMix	MCY	4.3270e-003	5.0000e-003
tblFleetMix	MDV	0.10	0.13

tblFleetMix	MH	5.3900e-004	0.00
tblFleetMix	MHD	0.02	0.01
tblFleetMix	OBUS	1.4230e-003	0.00
tblFleetMix	SBUS	7.5600e-004	0.00
tblFleetMix	UBUS	1.0620e-003	0.00
tblGrading	MaterialImported	0.00	11,650.00
tblLandUse	LotAcreage	7.62	8.15
tblLandUse	LotAcreage	0.21	0.50
tblLandUse	LotAcreage	11.84	7.65
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.012
tblProjectCharacteristics	CO2IntensityFactor	1325.65	565.5
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblVehicleTrips	ST_TR	6.39	4.90
tblVehicleTrips	ST_TR	158.37	283.67
tblVehicleTrips	SU_TR	5.86	4.90
tblVehicleTrips	SU_TR	131.84	283.67
tblVehicleTrips	WD_TR	6.65	4.90
tblVehicleTrips	WD_TR	127.15	283.67
tblWoodstoves	NumberCatalytic	22.50	0.00
tblWoodstoves	NumberNoncatalytic	22.50	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021											0.0000	660.7373	660.7373	0.0847	0.0000	662.8552
2022											0.0000	902.3583	902.3583	0.0880	0.0000	904.5575
Maximum											**0.0000**	**902.3583**	**902.3583**	**0.0880**	**0.0000**	**904.5575**

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					
2021											0.0000	660.7370	660.7370	0.0847	0.0000	662.8550
2022											0.0000	902.3580	902.3580	0.0880	0.0000	904.5572
Maximum											**0.0000**	**902.3580**	**902.3580**	**0.0880**	**0.0000**	**904.5572**

	ROG	NOx	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

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											0.0000	7.6017	7.6017	7.2700e-003	0.0000	7.7835
Energy											0.0000	1,153.8552	1,153.8552	0.0235	0.0125	1,158.1556
Mobile											0.0000	3,315.7573	3,315.7573	0.1180	0.0000	3,318.7062
Waste											63.7595	0.0000	63.7595	3.7681	0.0000	157.9614
Water											10.1683	160.2219	170.3903	1.0478	0.0255	204.1870
Total											**73.9278**	**4,637.4361**	**4,711.3639**	**4.9646**	**0.0380**	**4,846.7936**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	7.6017	7.6017	7.2700e-003	0.0000	7.7835
Energy											0.0000	1,088.8876	1,088.8876	0.0221	0.0119	1,092.9844
Mobile											0.0000	2,211.4356	2,211.4356	0.0949	0.0000	2,213.8080
Waste											31.8797	0.0000	31.8797	1.8840	0.0000	78.9807
Water											8.1347	135.5685	143.7031	0.8384	0.0205	170.7561
Total											**40.0144**	**3,443.4933**	**3,483.5077**	**2.8467**	**0.0323**	**3,564.3127**

	ROG	NOx	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**45.87**	**25.75**	**26.06**	**42.66**	**14.83**	**26.46**

3.0 Construction Detail

Construction Phase

Magnolia Flats - Riverside-South Coast County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/28/2021	5	20	
2	Grading	Grading	6/29/2021	8/9/2021	5	30	
3	Building Construction	Building Construction	8/10/2021	10/3/2022	5	300	
4	Paving	Paving	10/4/2022	10/31/2022	5	20	
5	Architectural Coating	Architectural Coating	11/1/2022	11/28/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 8.15

Residential Indoor: 911,250; Residential Outdoor: 303,750; Non-Residential Indoor: 13,500; Non-Residential Outdoor: 4,500; Striped Parking Area: 20,328 (Architectural Coating – sqft)

OffRoad Equipment

Appendix E

Greenhouse Gas Assessment

Magnolia Flats - Riverside-South Coast County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	6.00	396.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	6.00	1,456.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	470.00	105.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	94.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	34.0008	34.0008	9.5700e-003	0.0000	34.2400
Total											**0.0000**	**34.0008**	**34.0008**	**9.5700e-003**	**0.0000**	**34.2400**

3.2 Demolition - 2021

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	14.2064	14.2064	8.7000e-004	0.0000	14.2280
Vendor											0.0000	1.4638	1.4638	1.1000e-004	0.0000	1.4666
Worker											0.0000	1.3333	1.3333	3.0000e-005	0.0000	1.3341
Total											**0.0000**	**17.0035**	**17.0035**	**1.0100e-003**	**0.0000**	**17.0287**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	34.0007	34.0007	9.5700e-003	0.0000	34.2400
Total											**0.0000**	**34.0007**	**34.0007**	**9.5700e-003**	**0.0000**	**34.2400**

3.2 Demolition - 2021

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	14.2064	14.2064	8.7000e-004	0.0000	14.2280
Vendor											0.0000	1.4638	1.4638	1.1000e-004	0.0000	1.4666
Worker											0.0000	1.3333	1.3333	3.0000e-005	0.0000	1.3341
Total											**0.0000**	**17.0035**	**17.0035**	**1.0100e-003**	**0.0000**	**17.0287**

3.3 Grading - 2021

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	81.7425	81.7425	0.0264	0.0000	82.4034
Total											**0.0000**	**81.7425**	**81.7425**	**0.0264**	**0.0000**	**82.4034**

3.3 Grading - 2021

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	52.2335	52.2335	3.1900e-003	0.0000	52.3132
Vendor											0.0000	2.1958	2.1958	1.7000e-004	0.0000	2.2000
Worker											0.0000	2.6665	2.6665	6.0000e-005	0.0000	2.6681
Total											**0.0000**	**57.0958**	**57.0958**	**3.4200e-003**	**0.0000**	**57.1813**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	81.7424	81.7424	0.0264	0.0000	82.4033
Total											**0.0000**	**81.7424**	**81.7424**	**0.0264**	**0.0000**	**82.4033**

3.3 Grading - 2021

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	52.2335	52.2335	3.1900e-003	0.0000	52.3132
Vendor											0.0000	2.1958	2.1958	1.7000e-004	0.0000	2.2000
Worker											0.0000	2.6665	2.6665	6.0000e-005	0.0000	2.6681
Total											**0.0000**	**57.0958**	**57.0958**	**3.4200e-003**	**0.0000**	**57.1813**

3.4 Building Construction - 2021

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											0.0000	120.4514	120.4514	0.0291	0.0000	121.1779
Total											**0.0000**	**120.4514**	**120.4514**	**0.0291**	**0.0000**	**121.1779**

3.4 Building Construction - 2021

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
Vendor											0.0000	133.2094	133.2094	0.0102	0.0000	133.4634
Worker											0.0000	217.2341	217.2341	5.0600e-003	0.0000	217.3606
Total											**0.0000**	**350.4434**	**350.4434**	**0.0152**	**0.0000**	**350.8240**

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											0.0000	120.4512	120.4512	0.0291	0.0000	121.1777
Total											**0.0000**	**120.4512**	**120.4512**	**0.0291**	**0.0000**	**121.1777**

3.4 Building Construction - 2021

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
Vendor											0.0000	133.2094	133.2094	0.0102	0.0000	133.4634
Worker											0.0000	217.2341	217.2341	5.0600e-003	0.0000	217.3606
Total											**0.0000**	**350.4434**	**350.4434**	**0.0152**	**0.0000**	**350.8240**

3.4 Building Construction - 2022

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											0.0000	227.0907	227.0907	0.0544	0.0000	228.4509
Total											**0.0000**	**227.0907**	**227.0907**	**0.0544**	**0.0000**	**228.4509**

3.4 Building Construction - 2022

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
Vendor											0.0000	248.8889	248.8889	0.0181	0.0000	249.3425
Worker											0.0000	394.4630	394.4630	8.5700e-003	0.0000	394.6773
Total											**0.0000**	**643.3519**	**643.3519**	**0.0267**	**0.0000**	**644.0198**

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											0.0000	227.0905	227.0905	0.0544	0.0000	228.4506
Total											**0.0000**	**227.0905**	**227.0905**	**0.0544**	**0.0000**	**228.4506**

3.4 Building Construction - 2022

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
Vendor											0.0000	248.8889	248.8889	0.0181	0.0000	249.3425
Worker											0.0000	394.4630	394.4630	8.5700e-003	0.0000	394.6773
Total											**0.0000**	**643.3519**	**643.3519**	**0.0267**	**0.0000**	**644.0198**

3.5 Paving - 2022

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											0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**20.0276**	**20.0276**	**6.4800e-003**	**0.0000**	**20.1895**

3.5 Paving - 2022

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
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1.2846	1.2846	3.0000e-005	0.0000	1.2853
Total											**0.0000**	**1.2846**	**1.2846**	**3.0000e-005**	**0.0000**	**1.2853**

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											0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895
Paving											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total											**0.0000**	**20.0275**	**20.0275**	**6.4800e-003**	**0.0000**	**20.1895**

3.5 Paving - 2022

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
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	1.2846	1.2846	3.0000e-005	0.0000	1.2853
Total											**0.0000**	**1.2846**	**1.2846**	**3.0000e-005**	**0.0000**	**1.2853**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total											**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.6 Architectural Coating - 2022

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
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	8.0503	8.0503	1.7000e-004	0.0000	8.0546
Total											**0.0000**	**8.0503**	**8.0503**	**1.7000e-004**	**0.0000**	**8.0546**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road											0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total											**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.6 Architectural Coating - 2022

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
Vendor											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker											0.0000	8.0503	8.0503	1.7000e-004	0.0000	8.0546
Total											**0.0000**	**8.0503**	**8.0503**	**1.7000e-004**	**0.0000**	**8.0546**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Increase Density

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	2,211.4356	2,211.4356	0.0949	0.0000	2,213.8080
Unmitigated											0.0000	3,315.7573	3,315.7573	0.1180	0.0000	3,318.7062

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,205.00	2,205.00	2205.00	7,534,820	4,583,036
High Turnover (Sit Down Restaurant)	2,553.03	2,553.03	2553.03	3,479,347	2,116,305
Parking Lot	0.00	0.00	0.00		
Total	4,758.03	4,758.03	4,758.03	11,014,167	6,699,341

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
High Turnover (Sit Down	16.60	8.40	6.90	8.50	72.50	19.00	37	20	43
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.596000	0.040000	0.203000	0.126000	0.008000	0.002000	0.010000	0.010000	0.000000	0.000000	0.005000	0.000000	0.000000
High Turnover (Sit Down Restaurant)	0.565475	0.033834	0.192058	0.100675	0.009211	0.004032	0.016699	0.069908	0.001423	0.001062	0.004327	0.000756	0.000539
Parking Lot	0.565475	0.033834	0.192058	0.100675	0.009211	0.004032	0.016699	0.069908	0.001423	0.001062	0.004327	0.000756	0.000539

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive 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	619.6438	619.6438	0.0132	3.2900e-003	620.9522
Electricity Unmitigated											0.0000	667.2682	667.2682	0.0142	3.5400e-003	668.6770
NaturalGas Mitigated											0.0000	469.2437	469.2437	8.9900e-003	8.6000e-003	472.0322
NaturalGas Unmitigated											0.0000	486.5870	486.5870	9.3300e-003	8.9200e-003	489.4785

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	6.65734e+006											0.0000	355.2608	355.2608	6.8100e-003	6.5100e-003	357.3719
High Turnover (Sit Down Restaurant)	2.46096e+006											0.0000	131.3262	131.3262	2.5200e-003	2.4100e-003	132.1066
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**486.5870**	**486.5870**	**9.3300e-003**	**8.9200e-003**	**489.4785**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	6.38127e+006											0.0000	340.5287	340.5287	6.5300e-003	6.2400e-003	342.5523
High Turnover (Sit Down Restaurant)	2.41203e+006											0.0000	128.7150	128.7150	2.4700e-003	2.3600e-003	129.4799
Parking Lot	0											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total												**0.0000**	**469.2437**	**469.2437**	**9.0000e-003**	**8.6000e-003**	**472.0322**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	2.05547e+006	527.2413	0.0112	2.8000e-003	528.3545
High Turnover (Sit Down Restaurant)	427320	109.6104	2.3300e-003	5.8000e-004	109.8418
Parking Lot	118580	30.4165	6.5000e-004	1.6000e-004	30.4808
Total		**667.2682**	**0.0142**	**3.5400e-003**	**668.6770**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.93105e+006	495.3273	0.0105	2.6300e-003	496.3731
High Turnover (Sit Down Restaurant)	401647	103.0250	2.1900e-003	5.5000e-004	103.2425
Parking Lot	83006	21.2916	4.5000e-004	1.1000e-004	21.3365
Total		**619.6438**	**0.0132**	**3.2900e-003**	**620.9522**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	7.6017	7.6017	7.2700e-003	0.0000	7.7835
Unmitigated											0.0000	7.6017	7.6017	7.2700e-003	0.0000	7.7835

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											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											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
Landscaping											0.0000	7.6017	7.6017	7.2700e-003	0.0000	7.7835
Total											**0.0000**	**7.6017**	**7.6017**	**7.2700e-003**	**0.0000**	**7.7835**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											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
Landscaping											0.0000	7.6017	7.6017	7.2700e-003	0.0000	7.7835
Total											**0.0000**	**7.6017**	**7.6017**	**7.2700e-003**	**0.0000**	**7.7835**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	143.7031	0.8384	0.0205	170.7561
Unmitigated	170.3903	1.0478	0.0255	204.1870

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	29.3193 / 18.4839	159.9025	0.9586	0.0234	190.8272
High Turnover (Sit Down Restaurant)	2.7318 / 0.17437	10.4877	0.0892	2.1500e-003	13.3598
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**170.3903**	**1.0478**	**0.0255**	**204.1870**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	23.4554 / 17.3564	135.2439	0.7670	0.0187	159.9990
High Turnover (Sit Down Restaurant)	2.18544 / 0.163734	8.4593	0.0714	1.7200e-003	10.7571
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**143.7031**	**0.8384**	**0.0204**	**170.7561**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	31.8797	1.8840	0.0000	78.9807
Unmitigated	63.7595	3.7681	0.0000	157.9614

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	207	42.0191	2.4833	0.0000	104.1006
High Turnover (Sit Down Restaurant)	107.1	21.7403	1.2848	0.0000	53.8608
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**63.7595**	**3.7681**	**0.0000**	**157.9614**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	103.5	21.0096	1.2416	0.0000	52.0503
High Turnover (Sit Down Restaurant)	53.55	10.8702	0.6424	0.0000	26.9304
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**31.8797**	**1.8840**	**0.0000**	**78.9807**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation