ALBERT A. WEBB ASSOCIATES

Technical Memorandum

To: Clara Miramontes, Assistant City Manager, City of Perris

From: Eliza Laws, Senior Environmental Analyst
Noemi Avila, Assistant Environmental Analyst

Date: May 4, 2018

Re: Air Quality/Greenhouse Gas Analysis for the Ethanac Bridge Project, City of Perris

The following air quality assessment was prepared to evaluate whether the expected criteria air pollutant emissions generated as a result of construction and operation of the proposed Project would cause exceedances of the South Coast Air Quality Management District's (SCAQMD) thresholds for air quality in the Project area. The greenhouse gas (GHG) assessment was prepared to evaluate whether the expected criteria GHG emissions generated as a result of construction and operation of the proposed Project would exceed the SCAQMD draft screening significance thresholds. 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 *CEQA Air Quality Handbook* prepared by the SCAQMD for quantification of emissions and evaluation of potential impacts to air resources. As recommended by SCAQMD staff, the **Cal**ifornia **E**missions **E**stimator **Mod**el® version 2016.3.2 (CalEEMod) was used to quantify Project-related emissions.

The Ethanac Bridge project ("Project") includes the construction of an approximately 450-foot long bridge (between abutments) crossing the San Jacinto River (in an east-to-west direction) at Ethanac Road within the City of Perris. The Project will address the construction of an approximately 80-foot wide bridge consisting of an approximately 7-foot thick Cast-in-Place Pre-Stressed (CIP/PS) concrete box girder which will be 450-feet long. The new bridge will be supported on triple column piers and two seat cantilever abutments on its east and west ends. The columns will rest on 3-column piers approximately 35 feet by 35 feet in size. Both the westerly and easterly abutments will be skewed at approximately 32 degrees to match the flow line of the river. The abutment front 2:1 channel slope will be covered with un-grouted rip-rap to control erosion and protect the footing from scour. Channel improvements immediately upstream and downstream of the proposed bridge will consist of un-grouted rip-rap and cut-off walls to protect the bridge abutment foundations from scour.

In order to connect the new bridge to the existing pavement of the eastern portion of Ethanac Road, Ethanac Road will need to be improved for 260 linear feet along the centerline of Ethanac Road within the 184-foot right-of-way.

▪ Regional Significance Thresholds

The thresholds contained in the *SCAQMD CEQA Air Quality Handbook*[1] (SCAQMD 1993) are considered regional thresholds and are shown in **Table 1 – SCAQMD CEQA Daily Regional Significance Thresholds**, below. These regional thresholds were developed based on the SCAQMD's treatment of a major stationary source.

Table 1 – SCAQMD CEQA Daily Regional Significance Thresholds

Emission Threshold	Units	VOC	NO_X	CO	SO_X	PM-10	PM-2.5
Construction	lbs/day	75	100	550	150	150	55
Operation	lbs/day	55	55	550	150	150	55

Air quality impacts can be described in a short- and long-term perspective. Short-term impacts occur during site grading and Project construction and consist of fugitive dust and other particulate matter, as well as exhaust emissions generated by construction-related vehicles. Long-term air quality impacts occur once the Project is in operation. Operational emissions from the bridge would be primarily from the infrequent visits by vehicles driven by maintenance personnel and are considered negligible; therefore, only short-term impacts were evaluated for the bridge.

The Project will be required to comply with existing SCAQMD rules for the reduction of fugitive dust emissions. SCAQMD Rule 403 establishes these procedures. Compliance with this rule is achieved through application of standard best management practices in construction and operation activities, such as the application of water or chemical stabilizers to disturbed soils, reducing haul road dust by application of water, covering haul vehicles, restricting vehicle speeds on unpaved roads to 15 mph, sweeping loose dirt from paved site access roadways, cessation of construction activity when winds exceed 25 mph and establishing a permanent, stabilizing ground cover on finished sites. In addition, projects that disturb 50 or more acres or more of soil, or move 5,000 cubic yards of materials per day are required to submit a Fugitive Dust Control Plan or a Large Operation Notification Form to SCAQMD. Based on the size of this Project's disturbance area (approximately 3.22 disturbed acres), a Fugitive Dust Control Plan or a Large Operation Notification Form would not be required.

Short-Term Analysis

Short-term emissions from Project construction were evaluated using the CalEEMod program. The estimated construction period for the proposed Project is approximately 12 months as identified below. The default parameters within CalEEMod were used, except as identified below, and these default values generally reflect a worst-case scenario, which means that Project emissions are expected to be equal to or less than the estimated emissions. In addition to the default values used (shown in the CalEEMod output Attachment to this memo), assumptions for each component of the Project relevant to model inputs for short-term construction emission estimates used are:

- The bridge construction is anticipated to begin in May 2019 with grading and bridge abutment placement. The modeled construction schedule for each construction activity is shown below:

Construction Activity	Start Date	End Date	Total Working Days
Grading/Bridge Abutment	May 1, 2019	July 23, 2019	60 days
Bridge Construction	July 24, 2019	April 28, 2020	200 days
Paving	April 1, 2020	April 28, 2020	20 days

[1] South Coast Air Quality Management District, *CEQA Air Quality Handbook*, November 1993. (Available at SCAQMD.)

- The equipment to be used for each activity is shown below based on engineering estimates:

Construction Activity	Off-Road Equipment	Unit Amount Phase 1	Hours/Day
Grading/Bridge Abutment	Rubber Tired Loaders	2	8
	Tractor/Loader/Backhoes	2	8
Bridge Construction	Cranes	1	8
	Forklifts	2	8
	Tractors/Loaders/Backhoes	2	8
Paving	Cement and Mortar Mixers	4	8
	Pavers	2	8
	Rollers	2	8
	Tractor/Loader/Backhoes	1	8

- Sixty (60) one-way hauling trips per day were added to the grading/bridge abutment and bridge construction activities to account for concrete truck trips delivery trips. A trip length of 3.5 miles was used because that is the distance to the nearby ready-mix concrete and aggregate plant.
- Ten (10) one-way vendor trips per day were added to the grading/bridge abutment and bridge construction activities to account for material delivery.
- To evaluate Project compliance with SCAQMD Rule 403 for fugitive dust control, the Project utilized the mitigation option of watering the Project site three times daily which achieves a control efficiency of 61 percent for PM-10 and PM-2.5 emissions.
- Two (2) one-way vendor trips were added to the grading/bridge abutment and paving activities to account for water truck trips.

The results of this analysis are summarized in **Table 2**, below.

Table 2 – Unmitigated Estimated Daily Construction Emissions

Activity	Peak Daily Emissions (lb/day)					
	VOC	NO_x	CO	SO_2	PM-10	PM-2.5
SCAQMD Daily Construction Thresholds	**75**	**100**	**550**	**150**	**150**	**55**
Grading/Bridge Abutment	3.02	**38.50**	14.96	0.04	**6.61**	**4.08**
Bridge Construction 2019	1.83	23.39	12.96	0.04	1.84	1.02
Bridge Construction 2020	**1.66**	21.49	**12.38**	**0.04**	1.81	0.94
Paving	**1.57**	13.64	**14.06**	**0.02**	1.00	0.75
Maximum[1]	**3.23**	**38.50**	**26.45**	**0.06**	**6.61**	**4.08**
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Note: [1] Maximum emissions are the greater of either Grading/Bridge Abutment or Bridge Construction 2019 alone, or Bridge Construction 2020 and Paving since these activities overlap. Maximum emissions shown in bold.

As shown in **Table 2**, above, the emissions from construction of the Project are below the SCAQMD daily construction thresholds for all the criteria pollutants.

Long-Term Analysis

Long-term air quality impacts occur once the Project is in operation. Operations emissions refer to a full range of activities that can or may generate pollutant emissions when the development is functioning in its intended use, and typically include vehicle emissions, area source emissions that include stationary

combustion of natural gas used for space and water heating, landscape maintenance, use of consumer products, and energy use.

Operational emissions related to the bridge would be primarily from the infrequent visits by vehicles driven by maintenance personnel and are considered negligible.

▪ Localized Significance Threshold Analysis

Background

As part of the SCAQMD's environmental justice program, attention has been focused on localized effects of air quality. Staff at SCAQMD has developed localized significance threshold (LST) methodology[2] that can be used by public agencies to determine whether or not a project may generate significant adverse localized air quality impacts (both short- and long-term). LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area (SRA). The Project is located in SRA 24.

Short-Term Analysis

According to the LST methodology, only on-site emissions need to be analyzed. Emissions associated with vendor and worker trips are mobile source emissions that occur off site. The emissions analyzed under the LST methodology are NO_2, CO, PM-10, and PM-2.5. SCAQMD has provided LST lookup tables[3] to allow users to readily determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts for projects five acres or smaller. The LST tables can be used as a screening tool to determine if dispersion modeling would be necessary. If project-related emissions are below the LST table emissions, no further analysis is necessary. The Project disturbs approximately 3.22 acres. The equipment for Project construction would result in a daily disturbance area of one acre, consistent with SCAQMD guidance, the LST for a one-acre site was used.[4]

The LST thresholds are estimated using the maximum daily disturbed area (in acres) and the distance of the Project to the nearest sensitive receptors (in meters). The closest sensitive receptors to the Project construction site are existing residential uses along Ethanac Road, approximately 90 meters (295 feet) northeast of the Project site. Therefore, the 50 meter LST was used to be conservative. The results are summarized in **Table 3**.

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[2] South Coast Air Quality Management District, *Final Localized Significance Threshold Methodology*, Revised July 2008. (Available at http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds, accessed May 2018.)

[3] http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds

[4] http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2

Table 3 –Unmitigated LST Results for Daily Construction Emissions

Pollutant	Peak Daily Emissions (lb/day)			
	NO_x	CO	PM-10	PM-2.5
LST Threshold for 1-acre at 50 meters	**148**	**887**	**12**	**4**
Grading/Bridge Abutment	**28.82**	13.17	**6.21**	**3.96**
Bridge Construction 2019	13.54	9.29	0.79	0.73
Bridge Construction 2020	12.20	**9.04**	0.68	0.63
Paving	13.36	**13.10**	0.73	0.68
Maximum[1]	**28.82**	**22.13**	**6.21**	**3.96**
Exceeds Threshold?	**No**	**No**	**No**	**No**

Note: [1] Maximum emissions are the greater of either Grading/Bridge Abutment or Bridge Construction 2019 alone, or Bridge Construction 2020 and Paving since these activities overlap. Maximum emissions shown in bold..

As shown in **Table 3** emissions from construction of the Project are below the LST established by SCAQMD.

Long-Term Analysis

The Project involves the construction of a bridge. The long-term emissions from the bridge, as discussed previously, are primarily in the form of mobile source emissions, with no stationary sources of emissions present. According to the LST methodology, LSTs only apply to the operational phase if a project includes stationary sources or on-site mobile equipment generating on-site emissions. The proposed Project does not include such uses. Therefore, no long-term LST analysis is needed.

▪ Greenhouse Gas Analysis

Greenhouse gases (GHG) are not presented in lbs/day like criteria pollutants; they are typically evaluated on an annual basis using the metric system. Several agencies, at various levels, have proposed draft GHG significance thresholds for use in CEQA documents. SCAQMD has been working on GHG thresholds for development projects. In December 2008, the SCAQMD adopted a threshold of 10,000 metric tonnes per year of carbon dioxide equivalents ($MTCO_2E$/yr) for stationary source projects where SCAQMD is the lead agency. The most recent draft proposal was in September 2010[5] and included screening significance thresholds for residential, commercial, and mixed-use projects at 3,500, 1,400, and 3,000 $MTCO_2E$/yr, respectively. Alternatively, a lead agency has the option to use 3,000 $MTCO_2E$/yr as a threshold for all non-industrial projects. Although both options are recommended by SCAQMD, a lead agency is advised to use only one option and to use it consistently. The SCAQMD significance thresholds also evaluate construction emissions by amortizing them over an expected project life of 30 years. If emissions are above the screening level threshold, additional analysis may be required. The analysis herein uses the threshold of 3,000 $MTCO_2E$/yr.

Short-Term Analysis

Construction-Related Emissions

The CalEEMod model calculates GHG emissions from fuel usage by construction equipment and construction-related activities, like construction worker trips, for the Project. The CalEEMod estimate does not analyze emissions from construction-related electricity or natural gas. Construction-related electricity and natural gas emissions vary based on the amount of electric power used during construction and other unknown factors which make them too speculative to quantify. The CalEEMod

[5] http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-main-presentation.pdf?sfvrsn=2

output results for construction-related GHG emissions provide for CO_2, methane (CH_4), nitrous oxide (N_2O), and CO_2E[6] as shown on **Table 4**.

Table 4 – Project Construction Equipment GHG Emissions

Year	Metric Tons per year (MT/yr)			
	Total CO_2	Total CH_4	Total N_2O	Total CO_2E
2019	327.19	0.07	0.00	328.87
2020	172.37	0.03	0.00	173.22
Total	**499.56**	**0.10**	**0.00**	**502.09**
			Amortized[1]	**16.74**

Note: [1]Construction emissions were amortized over a 30 year period, as recommended by SCAQMD.

Results indicate that an estimated 502.09 $MTCO_2E$ will occur from Project construction equipment over the course of the estimated approximately 12 month construction period. Since the draft SCAQMD GHG threshold guidance document released in October 2008[7] recommends that construction emissions be amortized for a project lifetime of 30 years to ensure that GHG reduction measures address construction GHG emissions as part of the operational reduction strategies, the total GHG emissions from Project construction were amortized and equal approximately 17 $MTCO_2E$ per year.

The proposed Project does not fit into the categories provided (industrial, commercial, and residential) in the draft thresholds from SCAQMD. The Project's emissions were compared to the SCAQMD recommended screening level of 3,000 $MTCO_2E$/yr. Due to the lack of adopted emissions thresholds, the estimated amount of emissions from Project construction and negligible operational emissions from infrequent maintenance vehicles related to the bridge, the proposed Project will not generate GHG emissions that exceed the screening threshold.

▪ Conclusion

The conclusion of this analysis indicates that construction of the proposed Project will not exceed criteria pollutant thresholds established by SCAQMD on a regional or localized level. No mitigation is required. The Project will not generate GHG emissions that exceed the SCAQMD screening threshold.

Should you have any questions, please contact me at (951) 686-1070.

[6] CO_2E is the sum of CO_2 emissions estimated plus the sum of CH_4 and N_2O emissions estimated multiplied by their respective global warming potential (GWP).

[7] http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf?sfvrsn=2

CALEEMOD OUTPUT FILES

Ethanac Bridge Project

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.50	Acre	0.50	21,780.00	0
Other Non-Asphalt Surfaces	2.72	Acre	2.72	118,483.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per Project Description and Engineer

Construction Phase - Per Engineer

Off-road Equipment - Per Engineer

Off-road Equipment - Per Engineer

Off-road Equipment - Per Engineer

Trips and VMT - Grading and Construction total vendor trips are 2 water trucks and 10 for material delivery. Water truck trips were added to graing and paving. Total Hauling trips for Grading and Construction are the total concrete truck trips.

Construction Off-road Equipment Mitigation - Per Rule 403

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	200.00
tblConstructionPhase	NumDays	8.00	60.00
tblConstructionPhase	NumDays	18.00	20.00
tblGrading	AcresOfGrading	0.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	3.50
tblTripsAndVMT	HaulingTripLength	20.00	3.50
tblTripsAndVMT	HaulingTripNumber	0.00	3,600.00
tblTripsAndVMT	HaulingTripNumber	0.00	12,000.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	23.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	2.9975	38.5048	14.6720	0.0430	12.4883	1.5131	14.0014	6.7306	1.3929	8.1235	0.0000	4,387.0106	4,387.0106	0.9921	0.0000	4,411.8136
2020	3.2210	35.1287	26.4459	0.0637	1.3788	1.4343	2.8131	0.3657	1.3248	1.6905	0.0000	6,288.9410	6,288.9410	1.3177	0.0000	6,321.8835
Maximum	**3.2210**	**38.5048**	**26.4459**	**0.0637**	**12.4883**	**1.5131**	**14.0014**	**6.7306**	**1.3929**	**8.1235**	**0.0000**	**6,288.9410**	**6,288.9410**	**1.3177**	**0.0000**	**6,321.8835**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	2.9975	38.5048	14.6720	0.0430	5.0982	1.5131	6.6113	2.6875	1.3929	4.0804	0.0000	4,387.0106	4,387.0106	0.9921	0.0000	4,411.8136
2020	3.2210	35.1287	26.4459	0.0637	1.3788	1.4343	2.8131	0.3657	1.3248	1.6905	0.0000	6,288.9410	6,288.9410	1.3177	0.0000	6,321.8835
Maximum	**3.2210**	**38.5048**	**26.4459**	**0.0637**	**5.0982**	**1.5131**	**6.6113**	**2.6875**	**1.3929**	**4.0804**	**0.0000**	**6,288.9410**	**6,288.9410**	**1.3177**	**0.0000**	**6,321.8835**

	ROG	NOx	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**	**53.29**	**0.00**	**43.95**	**56.98**	**0.00**	**41.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	5/1/2019	7/23/2019	5	60	
2	Building Construction	Building Construction	7/24/2019	4/28/2020	5	200	
3	Paving	Paving	4/1/2020	4/28/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 3.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	4	8.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	4	10.00	12.00	3,600.00	14.70	6.90	3.50	LD_Mix	HDT_Mix	HHDT
Building Construction	5	59.00	12.00	12,000.00	14.70	6.90	3.50	LD_Mix	HDT_Mix	HHDT
Paving	9	23.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.1149	0.0000	12.1149	6.6281	0.0000	6.6281			0.0000			0.0000
Off-Road	2.7348	28.8236	13.1736	0.0233		1.4896	1.4896		1.3704	1.3704		2,305.9407	2,305.9407	0.7296		2,324.1801
Total	**2.7348**	**28.8236**	**13.1736**	**0.0233**	**12.1149**	**1.4896**	**13.6044**	**6.6281**	**1.3704**	**7.9985**		**2,305.9407**	**2,305.9407**	**0.7296**		**2,324.1801**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1677	8.2814	0.7982	0.0154	0.1848	0.0125	0.1973	0.0507	0.0120	0.0627		1,634.5546	1,634.5546	0.2327		1,640.3729
Vendor	0.0400	1.3660	0.2560	3.1600e-003	0.0769	0.0104	0.0872	0.0221	9.9300e-003	0.0321		332.7631	332.7631	0.0266		333.4288
Worker	0.0551	0.0338	0.4443	1.1400e-003	0.1118	6.9000e-004	0.1125	0.0296	6.4000e-004	0.0303		113.7522	113.7522	3.1800e-003		113.8319
Total	**0.2627**	**9.6812**	**1.4984**	**0.0197**	**0.3734**	**0.0236**	**0.3970**	**0.1025**	**0.0226**	**0.1251**		**2,081.0699**	**2,081.0699**	**0.2625**		**2,087.6335**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.7248	0.0000	4.7248	2.5850	0.0000	2.5850			0.0000			0.0000
Off-Road	2.7348	28.8236	13.1736	0.0233		1.4896	1.4896		1.3704	1.3704	0.0000	2,305.9407	2,305.9407	0.7296		2,324.1801
Total	**2.7348**	**28.8236**	**13.1736**	**0.0233**	**4.7248**	**1.4896**	**6.2144**	**2.5850**	**1.3704**	**3.9553**	**0.0000**	**2,305.9407**	**2,305.9407**	**0.7296**		**2,324.1801**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1677	8.2814	0.7982	0.0154	0.1848	0.0125	0.1973	0.0507	0.0120	0.0627		1,634.5546	1,634.5546	0.2327		1,640.3729
Vendor	0.0400	1.3660	0.2560	3.1600e-003	0.0769	0.0104	0.0872	0.0221	9.9300e-003	0.0321		332.7631	332.7631	0.0266		333.4288
Worker	0.0551	0.0338	0.4443	1.1400e-003	0.1118	6.9000e-004	0.1125	0.0296	6.4000e-004	0.0303		113.7522	113.7522	3.1800e-003		113.8319
Total	**0.2627**	**9.6812**	**1.4984**	**0.0197**	**0.3734**	**0.0236**	**0.3970**	**0.1025**	**0.0226**	**0.1251**		**2,081.0699**	**2,081.0699**	**0.2625**		**2,087.6335**

3.3 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2895	13.5384	9.2868	0.0150		0.7880	0.7880		0.7250	0.7250		1,488.9351	1,488.9351	0.4711		1,500.7122
Total	**1.2895**	**13.5384**	**9.2868**	**0.0150**		**0.7880**	**0.7880**		**0.7250**	**0.7250**		**1,488.9351**	**1,488.9351**	**0.4711**		**1,500.7122**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1677	8.2814	0.7982	0.0154	0.2874	0.0125	0.2999	0.0759	0.0120	0.0879		1,634.5546	1,634.5546	0.2327		1,640.3729
Vendor	0.0400	1.3660	0.2560	3.1600e-003	0.0769	0.0104	0.0872	0.0221	9.9300e-003	0.0321		332.7631	332.7631	0.0266		333.4288
Worker	0.3249	0.1994	2.6211	6.7400e-003	0.6595	4.0700e-003	0.6636	0.1749	3.7500e-003	0.1787		671.1382	671.1382	0.0188		671.6079
Total	**0.5325**	**9.8468**	**3.6753**	**0.0253**	**1.0237**	**0.0270**	**1.0507**	**0.2730**	**0.0257**	**0.2986**		**2,638.4559**	**2,638.4559**	**0.2782**		**2,645.4096**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2895	13.5384	9.2868	0.0150		0.7880	0.7880		0.7250	0.7250	0.0000	1,488.9351	1,488.9351	0.4711		1,500.7122
Total	**1.2895**	**13.5384**	**9.2868**	**0.0150**		**0.7880**	**0.7880**		**0.7250**	**0.7250**	**0.0000**	**1,488.9351**	**1,488.9351**	**0.4711**		**1,500.7122**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1677	8.2814	0.7982	0.0154	0.2874	0.0125	0.2999	0.0759	0.0120	0.0879		1,634.5546	1,634.5546	0.2327		1,640.3729
Vendor	0.0400	1.3660	0.2560	3.1600e-003	0.0769	0.0104	0.0872	0.0221	9.9300e-003	0.0321		332.7631	332.7631	0.0266		333.4288
Worker	0.3249	0.1994	2.6211	6.7400e-003	0.6595	4.0700e-003	0.6636	0.1749	3.7500e-003	0.1787		671.1382	671.1382	0.0188		671.6079
Total	**0.5325**	**9.8468**	**3.6753**	**0.0253**	**1.0237**	**0.0270**	**1.0507**	**0.2730**	**0.0257**	**0.2986**		**2,638.4559**	**2,638.4559**	**0.2782**		**2,645.4096**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1604	12.1968	9.0353	0.0150		0.6818	0.6818		0.6273	0.6273		1,456.3883	1,456.3883	0.4710		1,468.1640
Total	**1.1604**	**12.1968**	**9.0353**	**0.0150**		**0.6818**	**0.6818**		**0.6273**	**0.6273**		**1,456.3883**	**1,456.3883**	**0.4710**		**1,468.1640**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1526	7.8838	0.7439	0.0153	0.3726	9.8000e-003	0.3824	0.0968	9.3700e-003	0.1062		1,622.1870	1,622.1870	0.2175		1,627.6250
Vendor	0.0335	1.2347	0.2259	3.1300e-003	0.0768	7.0200e-003	0.0839	0.0221	6.7200e-003	0.0288		330.4691	330.4691	0.0248		331.0888
Worker	0.3002	0.1776	2.3790	6.5300e-003	0.6595	3.9900e-003	0.6635	0.1749	3.6800e-003	0.1786		649.9408	649.9408	0.0167		650.3573
Total	**0.4863**	**9.2961**	**3.3488**	**0.0250**	**1.1089**	**0.0208**	**1.1297**	**0.2939**	**0.0198**	**0.3136**		**2,602.5969**	**2,602.5969**	**0.2590**		**2,609.0711**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1604	12.1968	9.0353	0.0150		0.6818	0.6818		0.6273	0.6273	0.0000	1,456.3883	1,456.3883	0.4710		1,468.1639
Total	**1.1604**	**12.1968**	**9.0353**	**0.0150**		**0.6818**	**0.6818**		**0.6273**	**0.6273**	**0.0000**	**1,456.3883**	**1,456.3883**	**0.4710**		**1,468.1639**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1526	7.8838	0.7439	0.0153	0.3726	9.8000e-003	0.3824	0.0968	9.3700e-003	0.1062		1,622.1870	1,622.1870	0.2175		1,627.6250
Vendor	0.0335	1.2347	0.2259	3.1300e-003	0.0768	7.0200e-003	0.0839	0.0221	6.7200e-003	0.0288		330.4691	330.4691	0.0248		331.0888
Worker	0.3002	0.1776	2.3790	6.5300e-003	0.6595	3.9900e-003	0.6635	0.1749	3.6800e-003	0.1786		649.9408	649.9408	0.0167		650.3573
Total	**0.4863**	**9.2961**	**3.3488**	**0.0250**	**1.1089**	**0.0208**	**1.1297**	**0.2939**	**0.0198**	**0.3136**		**2,602.5969**	**2,602.5969**	**0.2590**		**2,609.0711**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3862	13.3607	13.0968	0.0206		0.7290	0.7290		0.6752	0.6752		1,921.5108	1,921.5108	0.5771		1,935.9379
Paving	0.0655					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4517**	**13.3607**	**13.0968**	**0.0206**		**0.7290**	**0.7290**		**0.6752**	**0.6752**		**1,921.5108**	**1,921.5108**	**0.5771**		**1,935.9379**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.5700e-003	0.2058	0.0377	5.2000e-004	0.0128	1.1700e-003	0.0140	3.6900e-003	1.1200e-003	4.8100e-003		55.0782	55.0782	4.1300e-003		55.1815
Worker	0.1170	0.0692	0.9274	2.5400e-003	0.2571	1.5600e-003	0.2586	0.0682	1.4300e-003	0.0696		253.3667	253.3667	6.4900e-003		253.5291
Total	**0.1226**	**0.2750**	**0.9650**	**3.0600e-003**	**0.2699**	**2.7300e-003**	**0.2726**	**0.0719**	**2.5500e-003**	**0.0744**		**308.4449**	**308.4449**	**0.0106**		**308.7106**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3862	13.3607	13.0968	0.0206		0.7290	0.7290		0.6752	0.6752	0.0000	1,921.5108	1,921.5108	0.5771		1,935.9379
Paving	0.0655					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4517**	**13.3607**	**13.0968**	**0.0206**		**0.7290**	**0.7290**		**0.6752**	**0.6752**	**0.0000**	**1,921.5108**	**1,921.5108**	**0.5771**		**1,935.9379**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.5700e-003	0.2058	0.0377	5.2000e-004	0.0128	1.1700e-003	0.0140	3.6900e-003	1.1200e-003	4.8100e-003		55.0782	55.0782	4.1300e-003		55.1815
Worker	0.1170	0.0692	0.9274	2.5400e-003	0.2571	1.5600e-003	0.2586	0.0682	1.4300e-003	0.0696		253.3667	253.3667	6.4900e-003		253.5291
Total	**0.1226**	**0.2750**	**0.9650**	**3.0600e-003**	**0.2699**	**2.7300e-003**	**0.2726**	**0.0719**	**2.5500e-003**	**0.0744**		**308.4449**	**308.4449**	**0.0106**		**308.7106**

CalEEMod Version: CalEEMod.2016.3.2

Date: 5/3/2018 9:42 AM

Ethanac Bridge Project - Riverside-South Coast County, Winter

Ethanac Bridge Project

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.50	Acre	0.50	21,780.00	0
Other Non-Asphalt Surfaces	2.72	Acre	2.72	118,483.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per Project Description and Engineer

Construction Phase - Per Engineer

Off-road Equipment - Per Engineer

Off-road Equipment - Per Engineer

Off-road Equipment - Per Engineer

Trips and VMT - Grading and Construction total vendor trips are 2 water trucks and 10 for material delivery. Water truck trips were added to graing and paving. Total Hauling trips for Grading and Construction are the total concrete truck trips.

Construction Off-road Equipment Mitigation - Per Rule 403

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	200.00
tblConstructionPhase	NumDays	8.00	60.00
tblConstructionPhase	NumDays	18.00	20.00
tblGrading	AcresOfGrading	0.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	3.50
tblTripsAndVMT	HaulingTripLength	20.00	3.50
tblTripsAndVMT	HaulingTripNumber	0.00	3,600.00
tblTripsAndVMT	HaulingTripNumber	0.00	12,000.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	23.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	3.0156	38.2883	14.9590	0.0416	12.4883	1.5143	14.0025	6.7306	1.3940	8.1246	0.0000	4,241.4601	4,241.4601	1.0236	0.0000	4,267.0493
2020	3.2306	34.9232	26.1640	0.0615	1.3788	1.4351	2.8138	0.3657	1.3255	1.6912	0.0000	6,060.2427	6,060.2427	1.3453	0.0000	6,093.8747
Maximum	**3.2306**	**38.2883**	**26.1640**	**0.0615**	**12.4883**	**1.5143**	**14.0025**	**6.7306**	**1.3940**	**8.1246**	**0.0000**	**6,060.2427**	**6,060.2427**	**1.3453**	**0.0000**	**6,093.8747**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	3.0156	38.2883	14.9590	0.0416	5.0982	1.5143	6.6124	2.6875	1.3940	4.0815	0.0000	4,241.4600	4,241.4600	1.0236	0.0000	4,267.0493
2020	3.2306	34.9232	26.1640	0.0615	1.3788	1.4351	2.8138	0.3657	1.3255	1.6912	0.0000	6,060.2427	6,060.2427	1.3453	0.0000	6,093.8747
Maximum	**3.2306**	**38.2883**	**26.1640**	**0.0615**	**5.0982**	**1.5143**	**6.6124**	**2.6875**	**1.3940**	**4.0815**	**0.0000**	**6,060.2427**	**6,060.2427**	**1.3453**	**0.0000**	**6,093.8747**

	ROG	NOx	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**	**53.29**	**0.00**	**43.95**	**56.98**	**0.00**	**41.19**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	5/1/2019	7/23/2019	5	60	
2	Building Construction	Building Construction	7/24/2019	4/28/2020	5	200	
3	Paving	Paving	4/1/2020	4/28/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 3.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	4	8.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	4	10.00	12.00	3,600.00	14.70	6.90	3.50	LD_Mix	HDT_Mix	HHDT
Building Construction	5	59.00	12.00	12,000.00	14.70	6.90	3.50	LD_Mix	HDT_Mix	HHDT
Paving	9	23.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.1149	0.0000	12.1149	6.6281	0.0000	6.6281			0.0000			0.0000
Off-Road	2.7348	28.8236	13.1736	0.0233		1.4896	1.4896		1.3704	1.3704		2,305.9407	2,305.9407	0.7296		2,324.1801
Total	**2.7348**	**28.8236**	**13.1736**	**0.0233**	**12.1149**	**1.4896**	**13.6044**	**6.6281**	**1.3704**	**7.9985**		**2,305.9407**	**2,305.9407**	**0.7296**		**2,324.1801**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1851	8.0668	1.1277	0.0143	0.1848	0.0135	0.1983	0.0507	0.0129	0.0637		1,513.1413	1,513.1413	0.2617		1,519.6824
Vendor	0.0420	1.3629	0.2976	3.0400e-003	0.0769	0.0105	0.0874	0.0221	0.0101	0.0322		320.3264	320.3264	0.0296		321.0658
Worker	0.0538	0.0350	0.3601	1.0200e-003	0.1118	6.9000e-004	0.1125	0.0296	6.4000e-004	0.0303		102.0517	102.0517	2.7700e-003		102.1209
Total	**0.2808**	**9.4647**	**1.7854**	**0.0184**	**0.3734**	**0.0247**	**0.3981**	**0.1025**	**0.0236**	**0.1261**		**1,935.5194**	**1,935.5194**	**0.2940**		**1,942.8692**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.7248	0.0000	4.7248	2.5850	0.0000	2.5850			0.0000			0.0000
Off-Road	2.7348	28.8236	13.1736	0.0233		1.4896	1.4896		1.3704	1.3704	0.0000	2,305.9407	2,305.9407	0.7296		2,324.1801
Total	**2.7348**	**28.8236**	**13.1736**	**0.0233**	**4.7248**	**1.4896**	**6.2144**	**2.5850**	**1.3704**	**3.9553**	**0.0000**	**2,305.9407**	**2,305.9407**	**0.7296**		**2,324.1801**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1851	8.0668	1.1277	0.0143	0.1848	0.0135	0.1983	0.0507	0.0129	0.0637		1,513.1413	1,513.1413	0.2617		1,519.6824
Vendor	0.0420	1.3629	0.2976	3.0400e-003	0.0769	0.0105	0.0874	0.0221	0.0101	0.0322		320.3264	320.3264	0.0296		321.0658
Worker	0.0538	0.0350	0.3601	1.0200e-003	0.1118	6.9000e-004	0.1125	0.0296	6.4000e-004	0.0303		102.0517	102.0517	2.7700e-003		102.1209
Total	**0.2808**	**9.4647**	**1.7854**	**0.0184**	**0.3734**	**0.0247**	**0.3981**	**0.1025**	**0.0236**	**0.1261**		**1,935.5194**	**1,935.5194**	**0.2940**		**1,942.8692**

3.3 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2895	13.5384	9.2868	0.0150		0.7880	0.7880		0.7250	0.7250		1,488.9351	1,488.9351	0.4711		1,500.7122
Total	**1.2895**	**13.5384**	**9.2868**	**0.0150**		**0.7880**	**0.7880**		**0.7250**	**0.7250**		**1,488.9351**	**1,488.9351**	**0.4711**		**1,500.7122**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1851	8.0668	1.1277	0.0143	0.2874	0.0135	0.3009	0.0759	0.0129	0.0889		1,513.1413	1,513.1413	0.2617		1,519.6824
Vendor	0.0420	1.3629	0.2976	3.0400e-003	0.0769	0.0105	0.0874	0.0221	0.0101	0.0322		320.3264	320.3264	0.0296		321.0658
Worker	0.3174	0.2064	2.1243	6.0400e-003	0.6595	4.0700e-003	0.6636	0.1749	3.7500e-003	0.1787		602.1051	602.1051	0.0163		602.5136
Total	**0.5445**	**9.6361**	**3.5497**	**0.0234**	**1.0237**	**0.0281**	**1.0518**	**0.2730**	**0.0267**	**0.2997**		**2,435.5728**	**2,435.5728**	**0.3076**		**2,443.2618**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2895	13.5384	9.2868	0.0150		0.7880	0.7880		0.7250	0.7250	0.0000	1,488.9351	1,488.9351	0.4711		1,500.7122
Total	**1.2895**	**13.5384**	**9.2868**	**0.0150**		**0.7880**	**0.7880**		**0.7250**	**0.7250**	**0.0000**	**1,488.9351**	**1,488.9351**	**0.4711**		**1,500.7122**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1851	8.0668	1.1277	0.0143	0.2874	0.0135	0.3009	0.0759	0.0129	0.0889		1,513.1413	1,513.1413	0.2617		1,519.6824
Vendor	0.0420	1.3629	0.2976	3.0400e-003	0.0769	0.0105	0.0874	0.0221	0.0101	0.0322		320.3264	320.3264	0.0296		321.0658
Worker	0.3174	0.2064	2.1243	6.0400e-003	0.6595	4.0700e-003	0.6636	0.1749	3.7500e-003	0.1787		602.1051	602.1051	0.0163		602.5136
Total	**0.5445**	**9.6361**	**3.5497**	**0.0234**	**1.0237**	**0.0281**	**1.0518**	**0.2730**	**0.0267**	**0.2997**		**2,435.5728**	**2,435.5728**	**0.3076**		**2,443.2618**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1604	12.1968	9.0353	0.0150		0.6818	0.6818		0.6273	0.6273		1,456.3883	1,456.3883	0.4710		1,468.1640
Total	**1.1604**	**12.1968**	**9.0353**	**0.0150**		**0.6818**	**0.6818**		**0.6273**	**0.6273**		**1,456.3883**	**1,456.3883**	**0.4710**		**1,468.1640**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1687	7.6774	1.0488	0.0142	0.3726	0.0104	0.3830	0.0968	9.9900e-003	0.1068		1,500.9303	1,500.9303	0.2449		1,507.0520
Vendor	0.0353	1.2282	0.2645	3.0200e-003	0.0768	7.1100e-003	0.0840	0.0221	6.8000e-003	0.0289		318.0513	318.0513	0.0276		318.7409
Worker	0.2940	0.1837	1.9244	5.8500e-003	0.6595	3.9900e-003	0.6635	0.1749	3.6800e-003	0.1786		583.0591	583.0591	0.0145		583.4212
Total	**0.4980**	**9.0893**	**3.2377**	**0.0230**	**1.1089**	**0.0215**	**1.1304**	**0.2939**	**0.0205**	**0.3143**		**2,402.0407**	**2,402.0407**	**0.2869**		**2,409.2141**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1604	12.1968	9.0353	0.0150		0.6818	0.6818		0.6273	0.6273	0.0000	1,456.3883	1,456.3883	0.4710		1,468.1639
Total	**1.1604**	**12.1968**	**9.0353**	**0.0150**		**0.6818**	**0.6818**		**0.6273**	**0.6273**	**0.0000**	**1,456.3883**	**1,456.3883**	**0.4710**		**1,468.1639**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1687	7.6774	1.0488	0.0142	0.3726	0.0104	0.3830	0.0968	9.9900e-003	0.1068		1,500.9303	1,500.9303	0.2449		1,507.0520
Vendor	0.0353	1.2282	0.2645	3.0200e-003	0.0768	7.1100e-003	0.0840	0.0221	6.8000e-003	0.0289		318.0513	318.0513	0.0276		318.7409
Worker	0.2940	0.1837	1.9244	5.8500e-003	0.6595	3.9900e-003	0.6635	0.1749	3.6800e-003	0.1786		583.0591	583.0591	0.0145		583.4212
Total	**0.4980**	**9.0893**	**3.2377**	**0.0230**	**1.1089**	**0.0215**	**1.1304**	**0.2939**	**0.0205**	**0.3143**		**2,402.0407**	**2,402.0407**	**0.2869**		**2,409.2141**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3862	13.3607	13.0968	0.0206		0.7290	0.7290		0.6752	0.6752		1,921.5108	1,921.5108	0.5771		1,935.9379
Paving	0.0655					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4517**	**13.3607**	**13.0968**	**0.0206**		**0.7290**	**0.7290**		**0.6752**	**0.6752**		**1,921.5108**	**1,921.5108**	**0.5771**		**1,935.9379**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.8800e-003	0.2047	0.0441	5.0000e-004	0.0128	1.1800e-003	0.0140	3.6900e-003	1.1300e-003	4.8200e-003		53.0086	53.0086	4.6000e-003		53.1235
Worker	0.1146	0.0716	0.7502	2.2800e-003	0.2571	1.5600e-003	0.2586	0.0682	1.4300e-003	0.0696		227.2942	227.2942	5.6500e-003		227.4354
Total	**0.1205**	**0.2763**	**0.7943**	**2.7800e-003**	**0.2699**	**2.7400e-003**	**0.2726**	**0.0719**	**2.5600e-003**	**0.0744**		**280.3028**	**280.3028**	**0.0103**		**280.5589**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3862	13.3607	13.0968	0.0206		0.7290	0.7290		0.6752	0.6752	0.0000	1,921.5108	1,921.5108	0.5771		1,935.9379
Paving	0.0655					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4517**	**13.3607**	**13.0968**	**0.0206**		**0.7290**	**0.7290**		**0.6752**	**0.6752**	**0.0000**	**1,921.5108**	**1,921.5108**	**0.5771**		**1,935.9379**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.8800e-003	0.2047	0.0441	5.0000e-004	0.0128	1.1800e-003	0.0140	3.6900e-003	1.1300e-003	4.8200e-003		53.0086	53.0086	4.6000e-003		53.1235
Worker	0.1146	0.0716	0.7502	2.2800e-003	0.2571	1.5600e-003	0.2586	0.0682	1.4300e-003	0.0696		227.2942	227.2942	5.6500e-003		227.4354
Total	**0.1205**	**0.2763**	**0.7943**	**2.7800e-003**	**0.2699**	**2.7400e-003**	**0.2726**	**0.0719**	**2.5600e-003**	**0.0744**		**280.3028**	**280.3028**	**0.0103**		**280.5589**

CalEEMod Version: CalEEMod.2016.3.2

Date: 5/3/2018 9:40 AM

Ethanac Bridge Project - Riverside-South Coast County, Annual

Ethanac Bridge Project

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	0.50	Acre	0.50	21,780.00	0
Other Non-Asphalt Surfaces	2.72	Acre	2.72	118,483.20	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Per Project Description and Engineer

Construction Phase - Per Engineer

Off-road Equipment - Per Engineer

Off-road Equipment - Per Engineer

Off-road Equipment - Per Engineer

Trips and VMT - Grading and Construction total vendor trips are 2 water trucks and 10 for material delivery. Water truck trips were added to graing and paving. Total Hauling trips for Grading and Construction are the total concrete truck trips.
Construction Off-road Equipment Mitigation - Per Rule 403

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	230.00	200.00
tblConstructionPhase	NumDays	8.00	60.00
tblConstructionPhase	NumDays	18.00	20.00
tblGrading	AcresOfGrading	0.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	HaulingTripLength	20.00	3.50
tblTripsAndVMT	HaulingTripLength	20.00	3.50
tblTripsAndVMT	HaulingTripNumber	0.00	3,600.00
tblTripsAndVMT	HaulingTripNumber	0.00	12,000.00
tblTripsAndVMT	VendorTripNumber	0.00	12.00
tblTripsAndVMT	VendorTripNumber	23.00	12.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

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					
2019	0.1934	2.4995	1.1758	3.5300e-003	0.4324	0.0923	0.5247	0.2173	0.0850	0.3023	0.0000	327.1898	327.1898	0.0671	0.0000	328.8665
2020	0.0847	1.0495	0.6571	1.8900e-003	0.0490	0.0372	0.0862	0.0130	0.0343	0.0473	0.0000	172.3696	172.3696	0.0339	0.0000	173.2173
Maximum	**0.1934**	**2.4995**	**1.1758**	**3.5300e-003**	**0.4324**	**0.0923**	**0.5247**	**0.2173**	**0.0850**	**0.3023**	**0.0000**	**327.1898**	**327.1898**	**0.0671**	**0.0000**	**328.8665**

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					
2019	0.1934	2.4995	1.1758	3.5300e-003	0.2107	0.0923	0.3030	0.0960	0.0850	0.1810	0.0000	327.1897	327.1897	0.0671	0.0000	328.8664
2020	0.0847	1.0495	0.6571	1.8900e-003	0.0490	0.0372	0.0862	0.0130	0.0343	0.0473	0.0000	172.3695	172.3695	0.0339	0.0000	173.2172
Maximum	**0.1934**	**2.4995**	**1.1758**	**3.5300e-003**	**0.2107**	**0.0923**	**0.3030**	**0.0960**	**0.0850**	**0.1810**	**0.0000**	**327.1897**	**327.1897**	**0.0671**	**0.0000**	**328.8664**

	ROG	NOx	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**	**46.06**	**0.00**	**36.29**	**52.66**	**0.00**	**34.69**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-1-2019**	**7-31-2019**	1.3171	1.3171
2	**8-1-2019**	**10-31-2019**	0.8260	0.8260
3	**11-1-2019**	**1-31-2020**	0.7989	0.7989
4	**2-1-2020**	**4-30-2020**	0.8752	0.8752
		Highest	1.3171	1.3171

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	5/1/2019	7/23/2019	5	60	
2	Building Construction	Building Construction	7/24/2019	4/28/2020	5	200	
3	Paving	Paving	4/1/2020	4/28/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 3.22

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	4	8.00	9	0.56
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	4	10.00	12.00	3,600.00	14.70	6.90	3.50	LD_Mix	HDT_Mix	HHDT
Building Construction	5	59.00	12.00	12,000.00	14.70	6.90	3.50	LD_Mix	HDT_Mix	HHDT
Paving	9	23.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3635	0.0000	0.3635	0.1988	0.0000	0.1988	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0820	0.8647	0.3952	7.0000e-004		0.0447	0.0447		0.0411	0.0411	0.0000	62.7574	62.7574	0.0199	0.0000	63.2538
Total	**0.0820**	**0.8647**	**0.3952**	**7.0000e-004**	**0.3635**	**0.0447**	**0.4081**	**0.1988**	**0.0411**	**0.2400**	**0.0000**	**62.7574**	**62.7574**	**0.0199**	**0.0000**	**63.2538**

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	5.2500e-003	0.2475	0.0282	4.5000e-004	5.4600e-003	3.9000e-004	5.8500e-003	1.5000e-003	3.7000e-004	1.8700e-003	0.0000	43.0975	43.0975	6.6700e-003	0.0000	43.2643
Vendor	1.2200e-003	0.0416	8.2700e-003	9.0000e-005	2.2700e-003	3.1000e-004	2.5900e-003	6.6000e-004	3.0000e-004	9.6000e-004	0.0000	8.9142	8.9142	7.6000e-004	0.0000	8.9332
Worker	1.4900e-003	1.0900e-003	0.0114	3.0000e-005	3.3000e-003	2.0000e-005	3.3200e-003	8.8000e-004	2.0000e-005	8.9000e-004	0.0000	2.8488	2.8488	8.0000e-005	0.0000	2.8508
Total	**7.9600e-003**	**0.2901**	**0.0479**	**5.7000e-004**	**0.0110**	**7.2000e-004**	**0.0118**	**3.0400e-003**	**6.9000e-004**	**3.7200e-003**	**0.0000**	**54.8605**	**54.8605**	**7.5100e-003**	**0.0000**	**55.0482**

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					0.1417	0.0000	0.1417	0.0776	0.0000	0.0776	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0820	0.8647	0.3952	7.0000e-004		0.0447	0.0447		0.0411	0.0411	0.0000	62.7574	62.7574	0.0199	0.0000	63.2538
Total	**0.0820**	**0.8647**	**0.3952**	**7.0000e-004**	**0.1417**	**0.0447**	**0.1864**	**0.0776**	**0.0411**	**0.1187**	**0.0000**	**62.7574**	**62.7574**	**0.0199**	**0.0000**	**63.2538**

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	5.2500e-003	0.2475	0.0282	4.5000e-004	5.4600e-003	3.9000e-004	5.8500e-003	1.5000e-003	3.7000e-004	1.8700e-003	0.0000	43.0975	43.0975	6.6700e-003	0.0000	43.2643
Vendor	1.2200e-003	0.0416	8.2700e-003	9.0000e-005	2.2700e-003	3.1000e-004	2.5900e-003	6.6000e-004	3.0000e-004	9.6000e-004	0.0000	8.9142	8.9142	7.6000e-004	0.0000	8.9332
Worker	1.4900e-003	1.0900e-003	0.0114	3.0000e-005	3.3000e-003	2.0000e-005	3.3200e-003	8.8000e-004	2.0000e-005	8.9000e-004	0.0000	2.8488	2.8488	8.0000e-005	0.0000	2.8508
Total	**7.9600e-003**	**0.2901**	**0.0479**	**5.7000e-004**	**0.0110**	**7.2000e-004**	**0.0118**	**3.0400e-003**	**6.9000e-004**	**3.7200e-003**	**0.0000**	**54.8605**	**54.8605**	**7.5100e-003**	**0.0000**	**55.0482**

3.3 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0742	0.7785	0.5340	8.6000e-004		0.0453	0.0453		0.0417	0.0417	0.0000	77.6675	77.6675	0.0246	0.0000	78.2818
Total	**0.0742**	**0.7785**	**0.5340**	**8.6000e-004**		**0.0453**	**0.0453**		**0.0417**	**0.0417**	**0.0000**	**77.6675**	**77.6675**	**0.0246**	**0.0000**	**78.2818**

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	0.0101	0.4743	0.0541	8.6000e-004	0.0163	7.4000e-004	0.0170	4.3000e-003	7.1000e-004	5.0100e-003	0.0000	82.6035	82.6035	0.0128	0.0000	82.9233
Vendor	2.3400e-003	0.0796	0.0159	1.8000e-004	4.3600e-003	6.0000e-004	4.9600e-003	1.2600e-003	5.7000e-004	1.8300e-003	0.0000	17.0855	17.0855	1.4600e-003	0.0000	17.1219
Worker	0.0169	0.0123	0.1287	3.6000e-004	0.0373	2.3000e-004	0.0375	9.9000e-003	2.2000e-004	0.0101	0.0000	32.2155	32.2155	8.8000e-004	0.0000	32.2375
Total	**0.0293**	**0.5662**	**0.1987**	**1.4000e-003**	**0.0579**	**1.5700e-003**	**0.0595**	**0.0155**	**1.5000e-003**	**0.0170**	**0.0000**	**131.9045**	**131.9045**	**0.0151**	**0.0000**	**132.2826**

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	0.0742	0.7785	0.5340	8.6000e-004		0.0453	0.0453		0.0417	0.0417	0.0000	77.6674	77.6674	0.0246	0.0000	78.2817
Total	**0.0742**	**0.7785**	**0.5340**	**8.6000e-004**		**0.0453**	**0.0453**		**0.0417**	**0.0417**	**0.0000**	**77.6674**	**77.6674**	**0.0246**	**0.0000**	**78.2817**

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	0.0101	0.4743	0.0541	8.6000e-004	0.0163	7.4000e-004	0.0170	4.3000e-003	7.1000e-004	5.0100e-003	0.0000	82.6035	82.6035	0.0128	0.0000	82.9233
Vendor	2.3400e-003	0.0796	0.0159	1.8000e-004	4.3600e-003	6.0000e-004	4.9600e-003	1.2600e-003	5.7000e-004	1.8300e-003	0.0000	17.0855	17.0855	1.4600e-003	0.0000	17.1219
Worker	0.0169	0.0123	0.1287	3.6000e-004	0.0373	2.3000e-004	0.0375	9.9000e-003	2.2000e-004	0.0101	0.0000	32.2155	32.2155	8.8000e-004	0.0000	32.2375
Total	**0.0293**	**0.5662**	**0.1987**	**1.4000e-003**	**0.0579**	**1.5700e-003**	**0.0595**	**0.0155**	**1.5000e-003**	**0.0170**	**0.0000**	**131.9045**	**131.9045**	**0.0151**	**0.0000**	**132.2826**

3.3 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0493	0.5184	0.3840	6.4000e-004		0.0290	0.0290		0.0267	0.0267	0.0000	56.1516	56.1516	0.0182	0.0000	56.6056
Total	**0.0493**	**0.5184**	**0.3840**	**6.4000e-004**		**0.0290**	**0.0290**		**0.0267**	**0.0267**	**0.0000**	**56.1516**	**56.1516**	**0.0182**	**0.0000**	**56.6056**

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	6.7800e-003	0.3336	0.0373	6.3000e-004	0.0156	4.3000e-004	0.0160	4.0500e-003	4.1000e-004	4.4600e-003	0.0000	60.5805	60.5805	8.8400e-003	0.0000	60.8015
Vendor	1.4500e-003	0.0531	0.0104	1.3000e-004	3.2200e-003	3.0000e-004	3.5200e-003	9.3000e-004	2.9000e-004	1.2200e-003	0.0000	12.5403	12.5403	1.0000e-003	0.0000	12.5653
Worker	0.0115	8.0700e-003	0.0862	2.6000e-004	0.0276	1.7000e-004	0.0277	7.3200e-003	1.6000e-004	7.4700e-003	0.0000	23.0588	23.0588	5.8000e-004	0.0000	23.0732
Total	**0.0198**	**0.3947**	**0.1339**	**1.0200e-003**	**0.0464**	**9.0000e-004**	**0.0473**	**0.0123**	**8.6000e-004**	**0.0132**	**0.0000**	**96.1795**	**96.1795**	**0.0104**	**0.0000**	**96.4400**

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	0.0493	0.5184	0.3840	6.4000e-004		0.0290	0.0290		0.0267	0.0267	0.0000	56.1515	56.1515	0.0182	0.0000	56.6055
Total	**0.0493**	**0.5184**	**0.3840**	**6.4000e-004**		**0.0290**	**0.0290**		**0.0267**	**0.0267**	**0.0000**	**56.1515**	**56.1515**	**0.0182**	**0.0000**	**56.6055**

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	6.7800e-003	0.3336	0.0373	6.3000e-004	0.0156	4.3000e-004	0.0160	4.0500e-003	4.1000e-004	4.4600e-003	0.0000	60.5805	60.5805	8.8400e-003	0.0000	60.8015
Vendor	1.4500e-003	0.0531	0.0104	1.3000e-004	3.2200e-003	3.0000e-004	3.5200e-003	9.3000e-004	2.9000e-004	1.2200e-003	0.0000	12.5403	12.5403	1.0000e-003	0.0000	12.5653
Worker	0.0115	8.0700e-003	0.0862	2.6000e-004	0.0276	1.7000e-004	0.0277	7.3200e-003	1.6000e-004	7.4700e-003	0.0000	23.0588	23.0588	5.8000e-004	0.0000	23.0732
Total	**0.0198**	**0.3947**	**0.1339**	**1.0200e-003**	**0.0464**	**9.0000e-004**	**0.0473**	**0.0123**	**8.6000e-004**	**0.0132**	**0.0000**	**96.1795**	**96.1795**	**0.0104**	**0.0000**	**96.4400**

3.4 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0139	0.1336	0.1310	2.1000e-004		7.2900e-003	7.2900e-003		6.7500e-003	6.7500e-003	0.0000	17.4317	17.4317	5.2400e-003	0.0000	17.5625
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1336**	**0.1310**	**2.1000e-004**		**7.2900e-003**	**7.2900e-003**		**6.7500e-003**	**6.7500e-003**	**0.0000**	**17.4317**	**17.4317**	**5.2400e-003**	**0.0000**	**17.5625**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	2.0800e-003	4.1000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4918	0.4918	4.0000e-005	0.0000	0.4928
Worker	1.0600e-003	7.4000e-004	7.9100e-003	2.0000e-005	2.5300e-003	2.0000e-005	2.5400e-003	6.7000e-004	1.0000e-005	6.9000e-004	0.0000	2.1151	2.1151	5.0000e-005	0.0000	2.1164
Total	**1.1200e-003**	**2.8200e-003**	**8.3200e-003**	**3.0000e-005**	**2.6600e-003**	**3.0000e-005**	**2.6800e-003**	**7.1000e-004**	**2.0000e-005**	**7.4000e-004**	**0.0000**	**2.6068**	**2.6068**	**9.0000e-005**	**0.0000**	**2.6092**

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	0.0139	0.1336	0.1310	2.1000e-004		7.2900e-003	7.2900e-003		6.7500e-003	6.7500e-003	0.0000	17.4316	17.4316	5.2400e-003	0.0000	17.5625
Paving	6.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0145**	**0.1336**	**0.1310**	**2.1000e-004**		**7.2900e-003**	**7.2900e-003**		**6.7500e-003**	**6.7500e-003**	**0.0000**	**17.4316**	**17.4316**	**5.2400e-003**	**0.0000**	**17.5625**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-005	2.0800e-003	4.1000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4918	0.4918	4.0000e-005	0.0000	0.4928
Worker	1.0600e-003	7.4000e-004	7.9100e-003	2.0000e-005	2.5300e-003	2.0000e-005	2.5400e-003	6.7000e-004	1.0000e-005	6.9000e-004	0.0000	2.1151	2.1151	5.0000e-005	0.0000	2.1164
Total	**1.1200e-003**	**2.8200e-003**	**8.3200e-003**	**3.0000e-005**	**2.6600e-003**	**3.0000e-005**	**2.6800e-003**	**7.1000e-004**	**2.0000e-005**	**7.4000e-004**	**0.0000**	**2.6068**	**2.6068**	**9.0000e-005**	**0.0000**	**2.6092**