

# **APPENDIX C**

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## **Air Quality and Greenhouse Gas Modeling**

1. Model Description and Methodology
2. CalEEMod Data Inputs
3. Air Quality and Greenhouse Gas Construction Emissions
4. CalEEMod Data Outputs

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The **California Emissions Estimator Model** (CalEEMod) is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operation activities (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user.

The most recent version of CalEEMod (version 2016.3.2) was used to estimate construction emissions for the project. Project-specific inputs, as shown in Part 1 of this Appendix, include:

1. Construction start date, schedule and duration of phases (Table 1)
2. Construction equipment, number and daily usage data by phase (Table 2)
3. Construction worker trips and on-road truck trips (also shown in Table 1)

CalEEMod defaults were used where project-specific data was not available such as trip lengths for workers and construction trucks. All default and project-specific assumptions are included in the CalEEMod output file included at the end of this appendix.

The project's criteria pollutant and GHG emissions (as estimated by CalEEMod) are summarized in Table 3 (in Part 1 of this Appendix). The table also includes a quantification of indirect GHG emissions associated with pumping and distribution of water used for dust suppression and soil compaction activities. Table 4, (in Part 1 of this Appendix) shows the calculation details of energy use associated with construction activities.

Part 2 of the Appendix includes the CalEEMod data outputs.

**DETAILS OF CONSTRUCTION EQUIPMENT AND ACTIVITY**

Construction Schedule Matched to dates in CDR			
Construction Phase	Start Date	End Date	Number of workdays in Phase
Phase 1 - Excavation	3/1/2021	9/30/2021	154
Phase 1 - Fill			
Phase 1 - PE, RAS-BNR1 Rehab			
Phase 2 - Excavation	4/1/2022	9/30/2022	131
Phase 2 - Fill			
Phase 2 - SE A-Side, PE, BS Rehab			
Phase 3 - Excavation	4/3/2023	10/2/2023	131
Phase 3 - Fill			
Phase 3 - SE B-Side, RS, SI, PLE, WAS Rehab			
Phase 4 - Excavation	4/1/2024	9/30/2025	392
Phase 4 - Fill			
Phase 4 - FI, NI, NE, ML Rehab			
Phase 5a - Road Rehab	4/8/2024	9/22/2025	381
Phase 5b - Construction - Enabling Road Construction	4/1/2025	9/29/2025	130

Construction Schedule Used in CalEEMod based on Number of Workdays Equipment is Used			
Construction Phase	Start Date	End Date	Number of workdays in Phase
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	3/1/2021	4/9/2021	30
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	4/1/2022	5/12/2022	30
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	4/3/2023	5/13/2023	30
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	4/1/2024	5/12/2024	30
Phase 5a - Road Rehab	4/8/2024	5/17/2024	30
	4/1/2025	5/12/2025	30

Construction Vehicle Trips by Phase						
Construction Phase	Construction workers/day	One-way Worker trips/day	One-Way Truck Trips/day (Off-haul)	One-Way Truck Trips/day (fill)	Construction Material delivery one-way trips/day	Haul Trips by Phase
Phase 1 - Excavation	11	23	44	44	36	2640
Phase 1 - Fill						
Phase 1 - PE, RAS-BNR1 Rehab						
Phase 2 - Excavation	11	23	44	44	36	2640
Phase 2 - Fill						
Phase 2 - SE A-Side, PE, BS Rehab						
Phase 3 - Excavation	11	23	44	44	36	2640
Phase 3 - Fill						
Phase 3 - SE B-Side, RS, SI, PLE, WAS Rehab						
Phase 4 - Excavation	11	23	44	44	36	2640
Phase 4 - Fill						
Phase 4 - FI, NI, NE, ML Rehab						
Phase 5a - Road Rehab	12	24	40	40	40	2400
Phase 5b - Construction - Enabling Road Construction	12	24	40	40	40	2400

**Construction Equipment and Activity by Phase**

Equipment	CalEEMod Equipment	Number of Equipment used	Avg Operation (hrs/day)	Number of Work Days in the construction phase equipment is used	Equipment size (hp)	Total Run Time (hours)
<b>Phase 1- Excavation, Fill, Rehab</b>						
Excavators	Excavators	1	8	30	100	240
Plate Compactors	Plate Compactors	1	8	30	100	240
Forklifts	Forklifts	1	8	30	100	240
Backhoe	Tractors/Loaders/Backhoes	1	8	30	100	240
Dumpers/Tenders	Dumpers/Tenders	3	8	30	100	240
Sweeper/Scrubber	Sweepers/Scrubbers	1	8	30	100	240
Boiler	Other Construction Equipment	1	8	30	172	240
Welder	Welders	1	8	30	100	240
Ride-on Compactor	Plate Compactors	1	8	30	100	240
<b>Phase 2- Excavation, Fill, Rehab</b>						
Excavators	Excavators	1	8	30	100	240
Plate Compactors	Plate Compactors	1	8	30	100	240
Forklifts	Forklifts	1	8	30	100	240
Backhoe	Tractors/Loaders/Backhoes	1	8	30	100	240
Dumpers/Tenders	Dumpers/Tenders	3	8	30	100	240
Sweeper/Scrubber	Sweepers/Scrubbers	1	8	30	100	240
Boiler	Other Construction Equipment	1	8	30	172	240
Welder	Welders	1	8	30	100	240
Ride-on Compactor	Plate Compactors	1	8	30	100	240
<b>Phase 3- Excavation, Fill, Rehab</b>						
Excavators	Excavators	1	8	30	100	240
Plate Compactors	Plate Compactors	1	8	30	100	240
Forklifts	Forklifts	1	8	30	100	240
Backhoe	Tractors/Loaders/Backhoes	1	8	30	100	240
Dumpers/Tenders	Dumpers/Tenders	3	8	30	100	240
Sweeper/Scrubber	Sweepers/Scrubbers	1	8	30	100	240
Boiler	Other Construction Equipment	1	8	30	172	240
Welder	Welders	1	8	30	100	240
Ride-on Compactor	Plate Compactors	1	8	30	100	240
<b>Phase 4- Excavation, Fill, Rehab</b>						
Excavators	Excavators	1	8	30	100	240
Plate Compactors	Plate Compactors	1	8	30	100	240
Forklifts	Forklifts	1	8	30	100	240
Backhoe	Tractors/Loaders/Backhoes	1	8	30	100	240
Dumpers/Tenders	Dumpers/Tenders	3	8	30	100	240
Sweeper/Scrubber	Sweepers/Scrubbers	1	8	30	100	240
Boiler	Other Construction Equipment	1	8	30	172	240
Welder	Welders	1	8	30	100	240
Ride-on Compactor	Plate Compactors	1	8	30	100	240
<b>Phase 5a - Road Rehab</b>						
Excavators	Excavators	1	8	30	100	240

Plate Compactors	Plate Compactors	1	8	30	100	240
Forklifts	Forklifts	1	8	30	100	240
Backhoe	Tractors/Loaders/Backhoes	1	8	30	100	240
Dumpers/Tenders	Dumpers/Tenders	3	8	30	100	240
Sweeper/Scrubber	Sweepers/Scrubbers	1	8	30	100	240
Ride-on Compactor	Plate Compactors	1	8	30	100	240
<b>Phase 5b - Construction - Enabling Road Construction</b>						
Excavators	Excavators	1	8	30	100	240
Plate Compactors	Plate Compactors	1	8	30	100	240
Forklifts	Forklifts	1	8	30	100	240
Backhoe	Tractors/Loaders/Backhoes	1	8	30	100	240
Dumpers/Tenders	Dumpers/Tenders	3	8	30	100	240
Sweeper/Scrubber	Sweepers/Scrubbers	1	8	30	100	240
Ride-on Compactor	Plate Compactors	1	8	30	100	240

## EMISSIONS SUMMARIES - Yard Piping & Roadway Improvements Project

### UNCONTROLLED CONSTRUCTION EMISSIONS - Criteria Air Pollutants

Construction Year	No. of Construction Days	Tons over Construction Period				Average Pounds per day			
		ROG	NOx	Exhaust PM-10	Exhaust PM-2.5	ROG	NOx	Exhaust PM-10	Exhaust PM-2.5
2021	30	0.04	0.64	0.02	0.01	2.5	42.5	1.0	0.9
2022	30	0.03	0.58	0.01	0.01	2.3	38.7	0.8	0.8
2023	30	0.03	0.44	0.01	0.01	1.9	29.3	0.7	0.7
2024	30	0.05	0.75	0.02	0.01	3.1	50.3	1.0	0.9
2025	30	0.02	0.32	0.00	0.00	1.2	21.2	0.3	0.3
Project Total	150	0.16	2.73	0.06	0.05	2.2	36.4	0.8	0.7

### CONSTRUCTION EMISSIONS - GHG (metric tons)

Construction Year	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	CO <sub>2</sub> e
2021	146	0.013	0.0	146
2022	144	0.013	0.0	145
2023	140	0.013	0.0	141
2024	257	0.022	0.0	258
2025	117	0.009	0.0	117
Project Total	805	0.071	0.0	807

### GHG from electricity use during construction - water use for dust suppression and operation of dewatering pumps

Water use cycle process energy intensity<sup>1</sup> = 4000 kWh/MG  
 Total water usage for project construction = 4.9354 MG  
 Energy used for water = 19741.6 kWh/MG

GHG emissions	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Emission Factor <sup>2</sup> (lb/MWh)	210	0.033	0.004
Energy used for water during construction (MWh)	19.7416	19.7416	19.7416
Energy used by dewatering pumps during construction (MWh) <sup>3</sup>	1.073808	1.073808	1.073808
Total energy use during construction (MWh)	20.815408	20.815408	20.815408
Conversion from lbs to metric tons	0.000453592	0.000453592	0.0004536
GHG emissions (metric tons)	2.0	0.000311576	3.777E-05
GWP <sup>4</sup>	1	25	298
GHG emissions as CO <sub>2</sub> e (metric tons)	1.983	0.008	0.011
<b>Total CO<sub>2</sub>e emissions (metric tons)</b>	<b>2.0</b>		

NOTES:

- Source: <https://www.energy.ca.gov/2005publications/CEC-700-2005-011/CEC-700-2005-011-SF.PDF>, Table C-6
- Source for GHG emission factors: [https://www.epa.gov/sites/production/files/2018-02/documents/egrid2016\\_summarytables.pdf](https://www.epa.gov/sites/production/files/2018-02/documents/egrid2016_summarytables.pdf), [http://www.pgecorp.com/corp\\_responsibility/reports/2019/assets/PGE\\_CRSR\\_2019.pdf](http://www.pgecorp.com/corp_responsibility/reports/2019/assets/PGE_CRSR_2019.pdf)
- Based on two 2 hp pumps operating for 12 hours a day for 30 days
- Source for GWP: <https://www.arb.ca.gov/cc/inventory/background/gwp.htm>

Yard Piping & Roadways - Santa Clara County, Annual

**Yard Piping & Roadways**  
Santa Clara County, Annual

**1.0 Project Characteristics**

**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	170.00	0.00	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.2	<b>Precipitation Freq (Days)</b>	58
<b>Climate Zone</b>	4			<b>Operational Year</b>	2026
<b>Utility Company</b>	Pacific Gas & Electric Company				
<b>CO2 Intensity (lb/MW hr)</b>	210	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

Project Characteristics - Latest PG&E GHG emission factor based on [http://www.pgecorp.com/corp\\_responsibility/reports/2019/assets/PGE\\_CRSR\\_2019.pdf](http://www.pgecorp.com/corp_responsibility/reports/2019/assets/PGE_CRSR_2019.pdf)

Land Use - Unit size assumed with estimated construction area for Project. Area of project site within the facility.

Construction Phase - Construction phasing and schedule from PD. Phase durations assumed to be equal to the number of workdays equipment is used based on the RFI response.

Off-road Equipment - Based on RFI Response

Off-road Equipment - Based on RFI Response

Off-road Equipment - Based on RFI Response

Off-road Equipment - Based on RFI Response

Off-road Equipment - Based on RFI Response

Off-road Equipment - Based on RFI Response

Trips and VMT - Based on RFI response

Vehicle Trips - Operational emissions not estimated

Energy Use -

Fleet Mix - Operational emissions not estimated

Off-road Equipment - From response to RFI

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_EF_Parking	150	0
tblConstructionPhase	NumDays	220.00	30.00
tblConstructionPhase	NumDays	220.00	30.00
tblFleetMix	HHD	0.02	1.00
tblFleetMix	LDA	0.62	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.18	0.00
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	5.0300e-003	0.00
tblFleetMix	MCY	5.2040e-003	0.00
tblFleetMix	MDV	0.10	0.00
tblFleetMix	MH	6.8100e-004	0.00
tblFleetMix	MHD	0.01	0.00
tblFleetMix	OBUS	2.1950e-003	0.00
tblFleetMix	SBUS	6.3800e-004	0.00
tblFleetMix	UBUS	1.5020e-003	0.00
tblLandUse	LotAcreage	0.00	170.00







tblOffRoadEquipment	PhaseName		Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab
tblOffRoadEquipment	PhaseName		Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab
tblOffRoadEquipment	PhaseName		Phase 5a - Road Rehab
tblOffRoadEquipment	PhaseName		Phase 5a - Road Rehab
tblOffRoadEquipment	PhaseName		Phase 5a - Road Rehab
tblOffRoadEquipment	PhaseName		Phase 5a - Road Rehab
tblOffRoadEquipment	PhaseName		Phase 5a - Road Rehab
tblOffRoadEquipment	PhaseName		Phase 5a - Road Rehab
tblOffRoadEquipment	PhaseName		Phase 5a - Road Rehab
tblOffRoadEquipment	PhaseName		Phase 5b - Enabling Road Construction
tblOffRoadEquipment	PhaseName		Phase 5b - Enabling Road Construction
tblOffRoadEquipment	PhaseName		Phase 5b - Enabling Road Construction
tblOffRoadEquipment	PhaseName		Phase 5b - Enabling Road Construction
tblOffRoadEquipment	PhaseName		Phase 5b - Enabling Road Construction
tblOffRoadEquipment	PhaseName		Phase 5b - Enabling Road Construction
tblOffRoadEquipment	PhaseName		Phase 5b - Enabling Road Construction
tblOnRoadDust	PhaseName	Phase 5b - Staging Road Construction	Phase 5b - Enabling Road Construction
tblProjectCharacteristics	CO2IntensityFactor	641.35	210
tblTripsAndVMT	HaulingTripNumber	0.00	2,640.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,640.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,640.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,640.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,400.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,400.00
tblTripsAndVMT	PhaseName	Phase 5b - Staging Road Construction	Phase 5b - Enabling Road Construction
tblTripsAndVMT	VendorTripNumber	0.00	36.00
tblTripsAndVMT	VendorTripNumber	0.00	36.00
tblTripsAndVMT	VendorTripNumber	0.00	36.00
tblTripsAndVMT	VendorTripNumber	0.00	36.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	VendorTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	28.00	24.00
tblTripsAndVMT	WorkerTripNumber	28.00	24.00
tblTripsAndVMT	WorkerTripNumber	28.00	24.00
tblTripsAndVMT	WorkerTripNumber	28.00	24.00
tblTripsAndVMT	WorkerTripNumber	23.00	24.00
tblTripsAndVMT	WorkerTripNumber	23.00	24.00

## 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	0.0376	0.6372	0.3388	1.54E-03	0.0288	0.0152	0.044	7.94E-03	0.0142	0.0221	0	146.0188	146.0188	0.0134	0	146.3532
2022	0.0341	0.5801	0.3338	1.53E-03	0.0288	0.0127	0.0415	7.94E-03	0.0119	0.0199	0	144.4596	144.4596	0.0132	0	144.7899
2023	0.029	0.44	0.3242	1.48E-03	0.0288	0.0107	0.0395	7.94E-03	9.97E-03	0.0179	0	140.2008	140.2008	0.0127	0	140.5172
2024	0.046	0.7547	0.5396	2.71E-03	0.056	0.0152	0.0711	0.0154	0.0141	0.0296	0	257.3551	257.3551	0.022	0	257.9042
2025	0.0173	0.3187	0.2149	1.23E-03	0.0272	4.78E-03	0.0319	7.50E-03	4.41E-03	0.0119	0	117.225	117.225	9.32E-03	0	117.4581
<b>Maximum</b>	<b>0.046</b>	<b>0.7547</b>	<b>0.5396</b>	<b>2.71E-03</b>	<b>0.056</b>	<b>0.0152</b>	<b>0.0711</b>	<b>0.0154</b>	<b>0.0142</b>	<b>0.0296</b>	<b>0</b>	<b>257.3551</b>	<b>257.3551</b>	<b>0.022</b>	<b>0</b>	<b>257.9042</b>

### 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	0.0376	0.6372	0.3388	1.54E-03	0.0288	0.0152	0.044	7.94E-03	0.0142	0.0221	0	146.0187	146.0187	0.0134	0	146.3531
2022	0.0341	0.5801	0.3338	1.53E-03	0.0288	0.0127	0.0415	7.94E-03	0.0119	0.0199	0	144.4596	144.4596	0.0132	0	144.7898
2023	0.029	0.44	0.3242	1.48E-03	0.0288	0.0107	0.0395	7.94E-03	9.97E-03	0.0179	0	140.2007	140.2007	0.0127	0	140.5171
2024	0.046	0.7547	0.5396	2.71E-03	0.056	0.0152	0.0711	0.0154	0.0141	0.0296	0	257.355	257.355	0.022	0	257.9041
2025	0.0173	0.3187	0.2149	1.23E-03	0.0272	4.78E-03	0.0319	7.50E-03	4.41E-03	0.0119	0	117.225	117.225	9.32E-03	0	117.4581
<b>Maximum</b>	<b>0.046</b>	<b>0.7547</b>	<b>0.5396</b>	<b>2.71E-03</b>	<b>0.056</b>	<b>0.0152</b>	<b>0.0711</b>	<b>0.0154</b>	<b>0.0142</b>	<b>0.0296</b>	<b>0</b>	<b>257.355</b>	<b>257.355</b>	<b>0.022</b>	<b>0</b>	<b>257.9041</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
<b>Percent Reduction</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-1-2021	5-31-2021	0.6422	0.6422
5	3-1-2022	5-31-2022	0.6076	0.6076
9	3-1-2023	5-31-2023	0.4432	0.4432
13	3-1-2024	5-31-2024	0.7775	0.7775
17	3-1-2025	5-31-2025	0.3328	0.3328
		<b>Highest</b>	<b>0.7775</b>	<b>0.7775</b>

## 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	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>

### 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	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	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

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Trenching	3/1/2021	4/9/2021	5	30	
2	Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Trenching	4/1/2022	5/12/2022	5	30	
3	Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Trenching	4/3/2023	5/12/2023	5	30	
4	Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Trenching	4/1/2024	5/12/2024	5	30	
5	Phase 5a - Road Rehab	Paving	4/8/2024	5/17/2024	5	30	
6	Phase 5b - Enabling Road Construction	Paving	4/1/2025	5/12/2025	5	30	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab			8.00		
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Dumpers/Tenders	3	8.00	100	0.38
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Excavators	1	8.00	100	0.38
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Forklifts	1	8.00	100	0.20
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Other Construction Equipment	1	8.00	172	0.42
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Plate Compactors	1	8.00	100	0.43
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Plate Compactors	1	8.00	100	0.43
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Sweepers/Scrubbers	1	8.00	100	0.46
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Tractors/Loaders/Backhoes	1	8.00	100	0.37
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	Welders	1	8.00	100	0.45
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Dumpers/Tenders	3	8.00	100	0.38
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Excavators	1	8.00	100	0.38
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Forklifts	1	8.00	100	0.20
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Other Construction Equipment	1	8.00	172	0.42
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Plate Compactors	1	8.00	100	0.43

Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Plate Compactors	1	8.00	100	0.43
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Sweepers/Scrubbers	1	8.00	100	0.46
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Tractors/Loaders/Backhoes	1	8.00	100	0.37
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	Welders	1	8.00	100	0.45
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Dumpers/Tenders	3	8.00	100	0.38
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Excavators	1	8.00	100	0.38
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Forklifts	1	8.00	100	0.20
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Other Construction Equipment	1	8.00	172	0.42
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Plate Compactors	1	8.00	100	0.43
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Plate Compactors	1	8.00	100	0.43
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Sweepers/Scrubbers	1	8.00	100	0.46
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Tractors/Loaders/Backhoes	1	8.00	100	0.37
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	Welders	1	8.00	100	0.45
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab		0		0	
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Dumpers/Tenders	3	8.00	100	0.38
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Excavators	1	8.00	100	0.38
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Forklifts	1	8.00	100	0.20
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Other Construction Equipment	1	8.00	172	0.42
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Plate Compactors	1	8.00	100	0.43
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Plate Compactors	1	8.00	100	0.43
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Sweepers/Scrubbers	1	8.00	100	0.46
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Tractors/Loaders/Backhoes	1	8.00	100	0.37
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	Welders	1	8.00	100	0.45
Phase 5a - Road Rehab	Dumpers/Tenders	3	8.00	100	0.38
Phase 5a - Road Rehab	Excavators	1	8.00	100	0.38
Phase 5a - Road Rehab	Forklifts	1	8.00	100	0.20
Phase 5a - Road Rehab	Plate Compactors	1	8.00	100	0.43
Phase 5a - Road Rehab	Plate Compactors	1	8.00	100	0.43
Phase 5a - Road Rehab	Sweepers/Scrubbers	1	8.00	100	0.46
Phase 5a - Road Rehab	Tractors/Loaders/Backhoes	1	8.00	100	0.37
Phase 5b - Enabling Road Construction	Dumpers/Tenders	3	8.00	100	0.38
Phase 5b - Enabling Road Construction	Excavators	1	8.00	100	0.38
Phase 5b - Enabling Road Construction	Forklifts	1	8.00	100	0.20
Phase 5b - Enabling Road Construction	Plate Compactors	1	8.00	100	0.43
Phase 5b - Enabling Road Construction	Plate Compactors	1	8.00	100	0.43
Phase 5b - Enabling Road Construction	Sweepers/Scrubbers	1	8.00	100	0.46
Phase 5b - Enabling Road Construction	Tractors/Loaders/Backhoes	1	8.00	100	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
Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab	11	24.00	36.00	2,640.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab	11	24.00	36.00	2,640.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab	11	24.00	36.00	2,640.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab	11	24.00	36.00	2,640.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Phase 5a - Road Rehab	9	24.00	40.00	2,400.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Phase 5b - Enabling Road Construction	9	24.00	40.00	2,400.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

### 3.2 Phase 1 - Excavation, Fill, PE, RAS-BNR1 Rehab - 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	0.0244	0.2280	0.2389	3.5000e-004		0.0139	0.0139		0.0130	0.0130	0.0000	30.2673	30.2673	8.2000e-003	0.0000		30.4723
<b>Total</b>	<b>0.0244</b>	<b>0.2280</b>	<b>0.2389</b>	<b>3.5000e-004</b>		<b>0.0139</b>	<b>0.0139</b>		<b>0.0130</b>	<b>0.0130</b>	<b>0.0000</b>	<b>30.2673</b>	<b>30.2673</b>	<b>8.2000e-003</b>	<b>0.0000</b>		<b>30.4723</b>

#### 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	0.0104	0.3530	0.0769	1.0300e-003	0.0224	1.1000e-003	0.0235	6.1500e-003	1.0500e-003	7.2100e-003	0.0000	99.4004	99.4004	4.5100e-003	0.0000		99.5131
Vendor	1.7600e-003	0.0555	0.0148	1.5000e-004	3.5500e-003	1.2000e-004	3.6800e-003	1.0300e-003	1.2000e-004	1.1400e-003	0.0000	13.9876	13.9876	6.1000e-004	0.0000		14.0028
Worker	1.1100e-003	7.7000e-004	8.2400e-003	3.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.3636	2.3636	5.0000e-005	0.0000		2.3649
<b>Total</b>	<b>0.0132</b>	<b>0.4093</b>	<b>0.0999</b>	<b>1.2100e-003</b>	<b>0.0288</b>	<b>1.2400e-003</b>	<b>0.0300</b>	<b>7.9400e-003</b>	<b>1.1900e-003</b>	<b>9.1300e-003</b>	<b>0.0000</b>	<b>115.7515</b>	<b>115.7515</b>	<b>5.1700e-003</b>	<b>0.0000</b>		<b>115.8808</b>

#### 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	0.0244	0.2280	0.2389	3.5000e-004		0.0139	0.0139		0.0130	0.0130	0.0000	30.2672	30.2672	8.2000e-003	0.0000		30.4723
<b>Total</b>	<b>0.0244</b>	<b>0.2280</b>	<b>0.2389</b>	<b>3.5000e-004</b>		<b>0.0139</b>	<b>0.0139</b>		<b>0.0130</b>	<b>0.0130</b>	<b>0.0000</b>	<b>30.2672</b>	<b>30.2672</b>	<b>8.2000e-003</b>	<b>0.0000</b>		<b>30.4723</b>

#### 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	0.0104	0.3530	0.0769	1.0300e-003	0.0224	1.1000e-003	0.0235	6.1500e-003	1.0500e-003	7.2100e-003	0.0000	99.4004	99.4004	4.5100e-003	0.0000		99.5131
Vendor	1.7600e-003	0.0555	0.0148	1.5000e-004	3.5500e-003	1.2000e-004	3.6800e-003	1.0300e-003	1.2000e-004	1.1400e-003	0.0000	13.9876	13.9876	6.1000e-004	0.0000		14.0028
Worker	1.1100e-003	7.7000e-004	8.2400e-003	3.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.3636	2.3636	5.0000e-005	0.0000		2.3649
<b>Total</b>	<b>0.0132</b>	<b>0.4093</b>	<b>0.0999</b>	<b>1.2100e-003</b>	<b>0.0288</b>	<b>1.2400e-003</b>	<b>0.0300</b>	<b>7.9400e-003</b>	<b>1.1900e-003</b>	<b>9.1300e-003</b>	<b>0.0000</b>	<b>115.7515</b>	<b>115.7515</b>	<b>5.1700e-003</b>	<b>0.0000</b>		<b>115.8808</b>

### 3.3 Phase 2 - Excavation, Fill, SE A-side, PE, BS Rehab - 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	0.0217	0.2028	0.2367	3.5000e-004		0.0117	0.0117		0.0109	0.0109	0.0000	30.2679	30.2679	8.1700e-003	0.0000		30.4722
<b>Total</b>	<b>0.0217</b>	<b>0.2028</b>	<b>0.2367</b>	<b>3.5000e-004</b>		<b>0.0117</b>	<b>0.0117</b>		<b>0.0109</b>	<b>0.0109</b>	<b>0.0000</b>	<b>30.2679</b>	<b>30.2679</b>	<b>8.1700e-003</b>	<b>0.0000</b>		<b>30.4722</b>

**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	9.7500e-003	0.3242	0.0756	1.0100e-003	0.0224	9.4000e-004	0.0233	6.1500e-003	9.0000e-004	7.0600e-003	0.0000	98.0603	98.0603	4.4100e-003	0.0000	98.1705
Vendor	1.6400e-003	0.0525	0.0139	1.4000e-004	3.5500e-003	1.1000e-004	3.6600e-003	1.0300e-003	1.0000e-004	1.1300e-003	0.0000	13.8538	13.8538	5.8000e-004	0.0000	13.8683
Worker	1.0400e-003	6.9000e-004	7.5700e-003	3.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.2777	2.2777	5.0000e-005	0.0000	2.2789
<b>Total</b>	<b>0.0124</b>	<b>0.3773</b>	<b>0.0971</b>	<b>1.1800e-003</b>	<b>0.0288</b>	<b>1.0700e-003</b>	<b>0.0299</b>	<b>7.9400e-003</b>	<b>1.0200e-003</b>	<b>8.9700e-003</b>	<b>0.0000</b>	<b>114.1918</b>	<b>114.1918</b>	<b>5.0400e-003</b>	<b>0.0000</b>	<b>114.3177</b>

**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	0.0217	0.2028	0.2367	3.5000e-004		0.0117	0.0117		0.0109	0.0109	0.0000	30.2678	30.2678	8.1700e-003	0.0000	30.4721
<b>Total</b>	<b>0.0217</b>	<b>0.2028</b>	<b>0.2367</b>	<b>3.5000e-004</b>		<b>0.0117</b>	<b>0.0117</b>		<b>0.0109</b>	<b>0.0109</b>	<b>0.0000</b>	<b>30.2678</b>	<b>30.2678</b>	<b>8.1700e-003</b>	<b>0.0000</b>	<b>30.4721</b>

**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	9.7500e-003	0.3242	0.0756	1.0100e-003	0.0224	9.4000e-004	0.0233	6.1500e-003	9.0000e-004	7.0600e-003	0.0000	98.0603	98.0603	4.4100e-003	0.0000	98.1705
Vendor	1.6400e-003	0.0525	0.0139	1.4000e-004	3.5500e-003	1.1000e-004	3.6600e-003	1.0300e-003	1.0000e-004	1.1300e-003	0.0000	13.8538	13.8538	5.8000e-004	0.0000	13.8683
Worker	1.0400e-003	6.9000e-004	7.5700e-003	3.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.2777	2.2777	5.0000e-005	0.0000	2.2789
<b>Total</b>	<b>0.0124</b>	<b>0.3773</b>	<b>0.0971</b>	<b>1.1800e-003</b>	<b>0.0288</b>	<b>1.0700e-003</b>	<b>0.0299</b>	<b>7.9400e-003</b>	<b>1.0200e-003</b>	<b>8.9700e-003</b>	<b>0.0000</b>	<b>114.1918</b>	<b>114.1918</b>	<b>5.0400e-003</b>	<b>0.0000</b>	<b>114.3177</b>

**3.4 Phase 3 - Excavation, Fill, SE B-side, RS, SI, PLE, WAS Rehab - 2023**

**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	0.0201	0.1863	0.2360	3.5000e-004		0.0102	0.0102		9.5400e-003	9.5400e-003	0.0000	30.2674	30.2674	8.1500e-003	0.0000	30.4711
<b>Total</b>	<b>0.0201</b>	<b>0.1863</b>	<b>0.2360</b>	<b>3.5000e-004</b>		<b>0.0102</b>	<b>0.0102</b>		<b>9.5400e-003</b>	<b>9.5400e-003</b>	<b>0.0000</b>	<b>30.2674</b>	<b>30.2674</b>	<b>8.1500e-003</b>	<b>0.0000</b>	<b>30.4711</b>

**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	6.6700e-003	0.2132	0.0687	9.7000e-004	0.0224	3.9000e-004	0.0228	6.1600e-003	3.7000e-004	6.5200e-003	0.0000	94.2823	94.2823	3.9700e-003	0.0000	94.3815
Vendor	1.2400e-003	0.0398	0.0125	1.4000e-004	3.5500e-003	5.0000e-005	3.6000e-003	1.0300e-003	4.0000e-005	1.0700e-003	0.0000	13.4599	13.4599	5.0000e-004	0.0000	13.4723
Worker	9.7000e-004	6.2000e-004	6.9600e-003	2.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.1912	2.1912	4.0000e-005	0.0000	2.1923
<b>Total</b>	<b>8.8800e-003</b>	<b>0.2536</b>	<b>0.0882</b>	<b>1.1300e-003</b>	<b>0.0288</b>	<b>4.6000e-004</b>	<b>0.0292</b>	<b>7.9500e-003</b>	<b>4.3000e-004</b>	<b>8.3700e-003</b>	<b>0.0000</b>	<b>109.9334</b>	<b>109.9334</b>	<b>4.5100e-003</b>	<b>0.0000</b>	<b>110.0461</b>

**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	0.0201	0.1863	0.2360	3.5000e-004		0.0102	0.0102		9.5400e-003	9.5400e-003	0.0000	30.2674	30.2674	8.1500e-003	0.0000	30.4711
<b>Total</b>	<b>0.0201</b>	<b>0.1863</b>	<b>0.2360</b>	<b>3.5000e-004</b>		<b>0.0102</b>	<b>0.0102</b>		<b>9.5400e-003</b>	<b>9.5400e-003</b>	<b>0.0000</b>	<b>30.2674</b>	<b>30.2674</b>	<b>8.1500e-003</b>	<b>0.0000</b>	<b>30.4711</b>

**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	6.6700e-003	0.2132	0.0687	9.7000e-004	0.0224	3.9000e-004	0.0228	6.1600e-003	3.7000e-004	6.5200e-003	0.0000	94.2823	94.2823	3.9700e-003	0.0000	94.3815
Vendor	1.2400e-003	0.0398	0.0125	1.4000e-004	3.5500e-003	5.0000e-005	3.6000e-003	1.0300e-003	4.0000e-005	1.0700e-003	0.0000	13.4599	13.4599	5.0000e-004	0.0000	13.4723
Worker	9.7000e-004	6.2000e-004	6.9600e-003	2.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.1912	2.1912	4.0000e-005	0.0000	2.1923
<b>Total</b>	<b>8.8800e-003</b>	<b>0.2536</b>	<b>0.0882</b>	<b>1.1300e-003</b>	<b>0.0288</b>	<b>4.6000e-004</b>	<b>0.0292</b>	<b>7.9500e-003</b>	<b>4.3000e-004</b>	<b>8.3700e-003</b>	<b>0.0000</b>	<b>109.9334</b>	<b>109.9334</b>	<b>4.5100e-003</b>	<b>0.0000</b>	<b>110.0461</b>

**3.5 Phase 4 - Excavation, Fill, FI, NI, NE, ML Rehab - 2024**

**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	0.0190	0.1747	0.2360	3.5000e-004		9.1200e-003	9.1200e-003		8.5100e-003	8.5100e-003	0.0000	30.2719	30.2719	8.1300e-003	0.0000	30.4751
<b>Total</b>	<b>0.0190</b>	<b>0.1747</b>	<b>0.2360</b>	<b>3.5000e-004</b>		<b>9.1200e-003</b>	<b>9.1200e-003</b>		<b>8.5100e-003</b>	<b>8.5100e-003</b>	<b>0.0000</b>	<b>30.2719</b>	<b>30.2719</b>	<b>8.1300e-003</b>	<b>0.0000</b>	<b>30.4751</b>

**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	6.6000e-003	0.2087	0.0690	9.6000e-004	0.0224	3.8000e-004	0.0228	6.1600e-003	3.6000e-004	6.5200e-003	0.0000	93.5808	93.5808	3.9600e-003	0.0000	93.6797
Vendor	1.2000e-003	0.0393	0.0121	1.4000e-004	3.5500e-003	5.0000e-005	3.6000e-003	1.0300e-003	4.0000e-005	1.0700e-003	0.0000	13.3699	13.3699	4.9000e-004	0.0000	13.3820
Worker	9.1000e-004	5.6000e-004	6.4600e-003	2.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.7000e-004	0.0000	2.1051	2.1051	4.0000e-005	0.0000	2.1061
<b>Total</b>	<b>8.7100e-003</b>	<b>0.2485</b>	<b>0.0876</b>	<b>1.1200e-003</b>	<b>0.0288</b>	<b>4.5000e-004</b>	<b>0.0292</b>	<b>7.9500e-003</b>	<b>4.2000e-004</b>	<b>8.3600e-003</b>	<b>0.0000</b>	<b>109.0558</b>	<b>109.0558</b>	<b>4.4900e-003</b>	<b>0.0000</b>	<b>109.1678</b>

**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	0.0190	0.1747	0.2360	3.5000e-004		9.1200e-003	9.1200e-003		8.5100e-003	8.5100e-003	0.0000	30.2719	30.2719	8.1300e-003	0.0000	30.4751
<b>Total</b>	<b>0.0190</b>	<b>0.1747</b>	<b>0.2360</b>	<b>3.5000e-004</b>		<b>9.1200e-003</b>	<b>9.1200e-003</b>		<b>8.5100e-003</b>	<b>8.5100e-003</b>	<b>0.0000</b>	<b>30.2719</b>	<b>30.2719</b>	<b>8.1300e-003</b>	<b>0.0000</b>	<b>30.4751</b>

**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	6.6000e-003	0.2087	0.0690	9.6000e-004	0.0224	3.8000e-004	0.0228	6.1600e-003	3.6000e-004	6.5200e-003	0.0000	93.5808	93.5808	3.9600e-003	0.0000	93.6797
Vendor	1.2000e-003	0.0393	0.0121	1.4000e-004	3.5500e-003	5.0000e-005	3.6000e-003	1.0300e-003	4.0000e-005	1.0700e-003	0.0000	13.3699	13.3699	4.9000e-004	0.0000	13.3820
Worker	9.1000e-004	5.6000e-004	6.4600e-003	2.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.7000e-004	0.0000	2.1051	2.1051	4.0000e-005	0.0000	2.1061
<b>Total</b>	<b>8.7100e-003</b>	<b>0.2485</b>	<b>0.0876</b>	<b>1.1200e-003</b>	<b>0.0288</b>	<b>4.5000e-004</b>	<b>0.0292</b>	<b>7.9500e-003</b>	<b>4.2000e-004</b>	<b>8.3600e-003</b>	<b>0.0000</b>	<b>109.0558</b>	<b>109.0558</b>	<b>4.4900e-003</b>	<b>0.0000</b>	<b>109.1678</b>

**3.6 Phase 5a - Road Rehab - 2024**

**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										M/yr					
Off-Road	0.0100	0.0976	0.1334	1.8000e-004		5.2100e-003	5.2100e-003		4.7900e-003	4.7900e-003	0.0000	15.9935	15.9935	5.1700e-003	0.0000	16.1228
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0100</b>	<b>0.0976</b>	<b>0.1334</b>	<b>1.8000e-004</b>		<b>5.2100e-003</b>	<b>5.2100e-003</b>		<b>4.7900e-003</b>	<b>4.7900e-003</b>	<b>0.0000</b>	<b>15.9935</b>	<b>15.9935</b>	<b>5.1700e-003</b>	<b>0.0000</b>	<b>16.1228</b>

**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										M/yr					
Hauling	6.0000e-003	0.1897	0.0628	8.8000e-004	0.0204	3.5000e-004	0.0207	5.6000e-003	3.3000e-004	5.9300e-003	0.0000	85.0734	85.0734	3.6000e-003	0.0000	85.1634
Vendor	1.3300e-003	0.0436	0.0134	1.5000e-004	3.9500e-003	5.0000e-005	4.0000e-003	1.1400e-003	5.0000e-005	1.1900e-003	0.0000	14.8554	14.8554	5.4000e-004	0.0000	14.8689
Worker	9.1000e-004	5.6000e-004	6.4600e-003	2.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.7000e-004	0.0000	2.1051	2.1051	4.0000e-005	0.0000	2.1061
<b>Total</b>	<b>8.2400e-003</b>	<b>0.2339</b>	<b>0.0826</b>	<b>1.0500e-003</b>	<b>0.0272</b>	<b>4.2000e-004</b>	<b>0.0276</b>	<b>7.5000e-003</b>	<b>4.0000e-004</b>	<b>7.8900e-003</b>	<b>0.0000</b>	<b>102.0340</b>	<b>102.0340</b>	<b>4.1800e-003</b>	<b>0.0000</b>	<b>102.1384</b>

**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										M/yr					
Off-Road	0.0100	0.0976	0.1334	1.8000e-004		5.2100e-003	5.2100e-003		4.7900e-003	4.7900e-003	0.0000	15.9935	15.9935	5.1700e-003	0.0000	16.1228
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>0.0100</b>	<b>0.0976</b>	<b>0.1334</b>	<b>1.8000e-004</b>		<b>5.2100e-003</b>	<b>5.2100e-003</b>		<b>4.7900e-003</b>	<b>4.7900e-003</b>	<b>0.0000</b>	<b>15.9935</b>	<b>15.9935</b>	<b>5.1700e-003</b>	<b>0.0000</b>	<b>16.1228</b>

**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										M/yr					
Hauling	6.0000e-003	0.1897	0.0628	8.8000e-004	0.0204	3.5000e-004	0.0207	5.6000e-003	3.3000e-004	5.9300e-003	0.0000	85.0734	85.0734	3.6000e-003	0.0000	85.1634
Vendor	1.3300e-003	0.0436	0.0134	1.5000e-004	3.9500e-003	5.0000e-005	4.0000e-003	1.1400e-003	5.0000e-005	1.1900e-003	0.0000	14.8554	14.8554	5.4000e-004	0.0000	14.8689
Worker	9.1000e-004	5.6000e-004	6.4600e-003	2.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.7000e-004	0.0000	2.1051	2.1051	4.0000e-005	0.0000	2.1061
<b>Total</b>	<b>8.2400e-003</b>	<b>0.2339</b>	<b>0.0826</b>	<b>1.0500e-003</b>	<b>0.0272</b>	<b>4.2000e-004</b>	<b>0.0276</b>	<b>7.5000e-003</b>	<b>4.0000e-004</b>	<b>7.8900e-003</b>	<b>0.0000</b>	<b>102.0340</b>	<b>102.0340</b>	<b>4.1800e-003</b>	<b>0.0000</b>	<b>102.1384</b>

**3.7 Phase 5b - Enabling Road Construction - 2025**

**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										M/yr					
Off-Road	9.2100e-003	0.0897	0.1328	1.8000e-004		4.3800e-003	4.3800e-003		4.0300e-003	4.0300e-003	0.0000	15.9917	15.9917	5.1700e-003	0.0000	16.1210
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>9.2100e-003</b>	<b>0.0897</b>	<b>0.1328</b>	<b>1.8000e-004</b>		<b>4.3800e-003</b>	<b>4.3800e-003</b>		<b>4.0300e-003</b>	<b>4.0300e-003</b>	<b>0.0000</b>	<b>15.9917</b>	<b>15.9917</b>	<b>5.1700e-003</b>	<b>0.0000</b>	<b>16.1210</b>

**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
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Category	tons/yr										MT/yr					
Hauling	5.9300e-003	0.1855	0.0631	8.7000e-004	0.0204	3.4000e-004	0.0207	5.6000e-003	3.3000e-004	5.9200e-003	0.0000	84.4543	84.4543	3.5900e-003	0.0000	84.5440
Vendor	1.2900e-003	0.0430	0.0131	1.5000e-004	3.9500e-003	5.0000e-005	4.0000e-003	1.1400e-003	5.0000e-005	1.1900e-003	0.0000	14.7591	14.7591	5.3000e-004	0.0000	14.7723
Worker	8.6000e-004	5.1000e-004	5.9800e-003	2.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.7000e-004	0.0000	2.0200	2.0200	4.0000e-005	0.0000	2.0209
<b>Total</b>	<b>8.0800e-003</b>	<b>0.2290</b>	<b>0.0821</b>	<b>1.0400e-003</b>	<b>0.0272</b>	<b>4.1000e-004</b>	<b>0.0276</b>	<b>7.5000e-003</b>	<b>4.0000e-004</b>	<b>7.8800e-003</b>	<b>0.0000</b>	<b>101.2333</b>	<b>101.2333</b>	<b>4.1600e-003</b>	<b>0.0000</b>	<b>101.3371</b>

#### 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	9.2100e-003	0.0897	0.1328	1.8000e-004		4.3800e-003	4.3800e-003		4.0300e-003	4.0300e-003	0.0000	15.9916	15.9916	5.1700e-003	0.0000	16.1209
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>9.2100e-003</b>	<b>0.0897</b>	<b>0.1328</b>	<b>1.8000e-004</b>		<b>4.3800e-003</b>	<b>4.3800e-003</b>		<b>4.0300e-003</b>	<b>4.0300e-003</b>	<b>0.0000</b>	<b>15.9916</b>	<b>15.9916</b>	<b>5.1700e-003</b>	<b>0.0000</b>	<b>16.1209</b>

#### 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	5.9300e-003	0.1855	0.0631	8.7000e-004	0.0204	3.4000e-004	0.0207	5.6000e-003	3.3000e-004	5.9200e-003	0.0000	84.4543	84.4543	3.5900e-003	0.0000	84.5440
Vendor	1.2900e-003	0.0430	0.0131	1.5000e-004	3.9500e-003	5.0000e-005	4.0000e-003	1.1400e-003	5.0000e-005	1.1900e-003	0.0000	14.7591	14.7591	5.3000e-004	0.0000	14.7723
Worker	8.6000e-004	5.1000e-004	5.9800e-003	2.0000e-005	2.8600e-003	2.0000e-005	2.8700e-003	7.6000e-004	2.0000e-005	7.7000e-004	0.0000	2.0200	2.0200	4.0000e-005	0.0000	2.0209
<b>Total</b>	<b>8.0800e-003</b>	<b>0.2290</b>	<b>0.0821</b>	<b>1.0400e-003</b>	<b>0.0272</b>	<b>4.1000e-004</b>	<b>0.0276</b>	<b>7.5000e-003</b>	<b>4.0000e-004</b>	<b>7.8800e-003</b>	<b>0.0000</b>	<b>101.2333</b>	<b>101.2333</b>	<b>4.1600e-003</b>	<b>0.0000</b>	<b>101.3371</b>

#### 4.0 Operational Detail - Mobile

Operational emissions not estimated in this run