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Document Title:	Revise AQ and HRA Modeling Analysis
Description:	Revised AQ and HRA Modeling Analysis with Overlapping Construction and Operation and with Diesel Particulate Filters
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CEC Submittal

Equinix Great Oaks South Revised Emissions and Modeling Assessment

San Jose, California

Prepared for

Prepared by

Atmospheric Dynamics, Inc.

August 2020

Revised Analyses for Air Quality and Public Health for Operations and Construction

Based on the Applicants recent decision to incorporate diesel particulate filters (DPF) on the proposed facility emergency generator engines, the Applicant is proposing an annual readiness and maintenance testing schedule per year per engine which would be comprised of 20 hours per year (per engine). Therefore, the maintenance and readiness testing would occur at loads in the range of 10% to 100% based upon the EPA D2 cycle emissions rates. For purposes of this application, emissions were calculated at full load (100%) to obtain the worst case hourly, daily, and annual emissions. Tables AQ1-1 and AQ1-2 in Appendix AQ1 present a wide range of emissions based upon load points, number of engines tested, etc. Each of the engines were evaluated for the following emissions scenarios, with Scenario 1 plus Scenario 2 emissions used for the comparison to the BAAQMD CEQA and NSR thresholds:

- **Scenario 1** - Declared emergency operations, 100 hrs/yr, D2 emissions factors, 100% load, with DPF controls. (BAAQMD Policy limit.) These emissions are not subject to NSR applicability.
- **Scenario 2** - Maintenance/Readiness operations, 20 hrs/yr, D2 emissions factors, 100% load, with DPF controls. (less than the ATCM limit.)
- **Scenario 3** – No longer used.

The tables which follow have been revised for the newly proposed DPF control and operational hour scenarios. In addition, the emissions, air quality impacts, and HRA results for the construction/operations overlap period are also included in a number of the following tables.

Table 1 Scenario 1 Emissions Summary for the Engines (100 Hours)						
Period	**NOx**	**CO**	**VOC**	**SO2**	**$PM_{10}/PM_{2.5}$**	**CO_2e**
QSK95						
Max Hourly, lbs	1606	184	84.5	1.84	5.51	-
Max Daily, lbs	38548	4410.6	2028.8	44.1	132.32	-
Max Annual, tons	80.3	9.19	4.23	0.09	0.276	9057
QSX15						
Max Hourly, lbs	17.9	1.93	0.92	0.024	0.073	-
Max Daily, lbs	430.5	46.41	22.05	0.58	1.74	-
Max Annual, tons	0.9	0.1	0.05	0.005	0.004	116
Total All Engines, tons/yr	**81.2**	**9.3**	**4.28**	**0.085**	**0.28**	**9173**
Scenario 1 - Declared emergency operations, 100 hrs/yr, D2 emissions factors, 100% load, with DPF controls.						

Table 2 Scenario 2 Emissions Summary for the Engines (20 Hours)						
Period	**NOx**	**CO**	**VOC**	**SO2**	**$PM_{10}/PM_{2.5}$**	**CO_2e**
QSK95						
Max Hourly, lbs	44.62	5.11	2.35	0.05	0.153	-
Max Daily, lbs	267.7	30.63	14.09	0.31	0.92	-
Max Annual, tons	16.06	1.85	0.85	0.018	0.055	
QSX15						
Max Hourly, lbs	5.98	0.65	0.31	0.01	0.13	-
Max Daily, lbs	17.94	1.93	0.92	0.024	0.073	-
Max Annual, tons	0.18	0.02	0.009	0.0002	0.0007	23
Total All Engines, tons/yr	**16.24**	**1.86**	**0.85**	**0.019**	**0.056**	**1834**
Scenario 2 - Maintenance/Readiness operations, 20 hrs/yr, D2 emissions factors, 100% load, with DPF controls.						

Table 3 BAAQMD 120 Hour per Year Emissions Summation (tons per year)						
Engines	**NOx**	**CO**	**VOC**	**SO2**	**$PM_{10}/PM_{2.5}$**	**CO_2e**
QSK95	96.37	11.03	5.07	0.11	0.33	10868
QSX15	1.076	0.116	0.055	0.001	0.004	139
Total	97.45	11.15	5.13	0.111	0.334	11007
Based on 40 CFR 89 D2 cycle weighted emissions. ***These values are NOT the NSR applicability values.***						

Table 4 Toxic Air Contaminant (DPM) Emissions from the Proposed Engines (per engine basis)	
Scenario	**QSK95**
Maximum Annual, lbs/yr	3.06
Maximum Hourly, lbs	0.153
Scenario	**QSX15**
Maximum Annual, lbs/yr	0.48
Maximum Hourly, lbs	0.024
Notes: DPM is the approved surrogate compound for diesel fuel combustion for purposes of health risk assessment. Annual emissions for each engine are based on the max allowed runtime of 20 hours per year, 100% load, EPA D2 cycle weighted emissions factors with DPF controls. DPM emission factor based on 0.015 g/bhp-hr	

Table 5 Engine Fuel Use Values	
Scenario	**Fuel Use, gallons (per engine basis)**
QSK95 Maximum Annual, gals/yr	4440
QSK95 Maximum Hourly, gals/hr	222
QSX15 Maximum Annual, gals/yr	680
QSX15 Maximum Hourly, gals/hr	34
Annual gallons based on 20 hrs/yr at 100% load.	
Total Annual Fuel Use (All Engines)	
Annual Fuel Use, gals/yr	161,880

Revised Impact Assessment

The following tables summarize the revised modeled concentrations based on the 20 hours per year of operation and the use of DPF, with the exception of the operational HRA where the engines were assumed to operate 50 hours per year (with DPF). The tables reflect the operations of the project, the impacts during construction and the combined impacts of both construction and operation of two of the completed data centers.

Table 6 Modeled Concentrations and Ambient Air Quality Standards						
Pollutant	**Averaging Period**	**Maximum Concentration (µg/m³)**	**Background (µg/m³)**	**Total (µg/m³)**	**Ambient Air Quality Standards (µg/m³)**	
					CAAQS	**NAAQS**
3-/8-/24-Hour Maxima shown for one larger QSK95 engine operating up to 6 hours/day (conservatively represents six engines operating 1 hour/day each) or one smaller QSX15 engine operating up to 3 hours/day (conservative represents three engines operating 1 hour/day each) during the ten hours from 7AM to 5PM.						
NO_2*	1-hour maximum (CAAQS)	N/A	N/A	276.1	339	-
	5-yr average of 1-hour yearly 98th % (NAAQS)**	N/A	N/A	79.4	-	188
	Annual maximum	3.49	24.5	28.0	57	100
CO	1-hour maximum	475	2,863	3,338	23,000	40,000
	8-hour maximum	172	2,405	2,577	10,000	10,000
SO_2	1-hour maximum (CAAQS)	0.84	18.1	18.9	655	-
	5-yr average of 1-hour yearly 99th% (NAAQS)**	0.003	7.1	7.1	-	196
	3-hour maximum	0.63	18.1	18.7	-	1,300
	24-hour maximum	0.09	2.9	3.0	105	365
	Annual maximum	0.004	0.5	0.5	-	80
PM_{10}	24-hour maximum (CAAQS)	0.31	122	122.3	50	-
	24-hour 6th highest over 5 years (NAAQS)	0.28	98	98.3	-	150
	Annual maximum (CAAQS)	0.013	23.1	23.1	20	-
$PM_{2.5}$	5-yr average of 24-hour yearly 98th% (NAAQS)	0.24	42	42.2	-	35

Table 6 Modeled Concentrations and Ambient Air Quality Standards						
Pollutant	**Averaging Period**	**Maximum Concentration (µg/m³)**	**Background (µg/m³)**	**Total (µg/m³)**	**Ambient Air Quality Standards (µg/m³)**	
					CAAQS	**NAAQS**
	Annual maximum (CAAQS)	0.013	12.8	12.8	12	-
	5-yr average of annual concentrations (NAAQS)	0.012	10.2	10.2	-	12.0

* 1-hour NO_2 impacts are evaluated using the USEPA Plume Volume Molar Ratio Method (PVMRM) and an in-stack NO_2/NOx ratio of 0.10 (10%), with appropriate maximum seasonal hourly NO_2 background values already added by AERMOD. Annual NO_2 impacts are evaluated with the USEPA Ambient Ratio Method #2 (ARM2) with USEPA-default minimum/maximum NO_2/NOx ambient ratios of 0.5/0.9.

** Impacts for the 1-hour statistical-based NO_2 and SO_2 NAAQS are based on the annual average emissions per USEPA guidance documents for intermittent sources like emergency generators. Impacts for the 1-hour NO_2 and SO_2 CAAQS are based on the 1-hour emission rate since these CAAQS are "values that are not to be exceeded".

TABLE 7 MODELED MAXIMUM CONSTRUCTION IMPACTS

Pollutant	Averaging Time	Maximum Construction Impacts (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standards (µg/m³)	Federal Standards (µg/m³)
NO_2	1-hour	19.97	162	182	339	-
	1-hour	14.8	95	110	-	188
	Annual	1.47	24.5	25.6	57	100
SO_2	1-hour	0.05	18.1	18.2	655	196
	3-hour	0.03	18.1	18.1	-	1300
	24-hour	0.01	2.9	2.9	105	365
	Annual	0.005	0.5	0.5	-	80
CO	1-hour	25.7	2,863	2,889	23,000	40,000
	8-hour	11.1	2,405	2,416	10,000	10,000
PM10	24-hour	3.58	122	125.6	50	150
	Annual[a]	1.3	23.1	24.4	20	-
PM2.5	24-hour	1.7	42	43.7	-	35
	Annual[a]	0.59	12.8	13.4	12	12.0

Notes:
[a] Maximum Annual Arithmetic Mean.

Table 8 REVISED OPERATIONS RESIDENTIAL RISK RESULTS				
Receptor ID	**Receptor, UTM**	**Cancer Risk**	**Chronic HI**	**Acute HI**
PMI	30, 608154.6, 4121397.9	2.59E-5	0.00600	-
MEIR	6493, 608800, 4121050	3.24E-6	0.00075	-
MEIS	6588, 608900, 4120900	2.41E-7	0.00056	-

Assumes each engine is tested for 50 hours per year. Permit limit will be 20 hours per year per engine.
DPM is the surrogate compound for construction equipment diesel exhaust. No acute REL has been established for DPM.
FAH=1 for all age groups from 3rd trimester to 16 years.
MEIS – Los Paseos School

Table 9 REVISED OPERATIONS WORKER RISK RESULTS				
Receptor ID	**Receptor, UTM**	**Cancer Risk**	**Chronic HI**	**Acute HI**
PMI	30, 608154.6, 4121397.9	7.80E-6	0.00600	-
MEIW	3572, 608220, 4121360	5.12E-6	0.00393	-
MEIS	6588, 608900, 4120900	7.25E-7	0.00056	-

Assumes each engine is tested for 50 hours per year. Permit limit will be 20 hours per year per engine.
DPM is the surrogate compound for construction equipment diesel exhaust. No acute REL has been established for DPM.
FAH not used.
MEIS – Los Paseos School

Table 10 REVISED CONSTRUCTION RISK RESULTS				
Receptor ID	**Receptor, UTM**	**Cancer Risk**	**Chronic HI**	**Acute HI**
PMI	30, 608154.6, 4121397.9	3.69E-5	0.0161	-
MEIR	6493, 608800, 4121050	3.59E-6	0.0016	-
MEIW	3500, 608200, 4121340	3.77E-6	0.0139	-
MEIS	6588, 608900, 4120900	2.74E-6	0.0011	-

DPM is the surrogate compound for construction equipment diesel exhaust. No acute REL has been established for DPM.
4.3 year construction period (HRA used 5 year exposure period.)
FAH=1 for all age groups from 3rd trimester to 16 years, for MEIR and MEIS.
FAH not used for MEIW.
MEIS – Los Paseos School

Construction and Operation Overlap

Construction Schedule and Workforce

The data center buildings would be constructed in three separate phases. One building would be constructed per phase, with construction over an approximately 13-15-month period per phase. The first phase is anticipated to start construction in late 2020.

In the construction data input files (Excel workbook), titled "Construction Data Request Form 102819.xls" dated 10/28/19 provided by the client, we note that a single site preparation period is identified, and that the total estimated time for each building phase is 350 days. Using 22 work days per month, the building period for each phased would be approximately 16 months, slightly higher than the range of values presented in the document text noted above. The emissions estimates prepared by ADI were completed prior to the final decision and description of the phases that were presented in the SPPE Application (as noted in the CEC comments).

Notwithstanding the foregoing, revised construction emissions have been prepared by ADI using CalEEMOd based on the following:

1. A single site preparation period was used.
2. Each building construction phase was input to arrive at the following time periods:
   a. Site preparation period of 3 months
   b. Building construction periods for SV12, SV18, and SV19 are 18, 17, and 17 months respectively. The 18-month period for Building SV12 includes the 3 month site preparation period.
   c. The interim periods were accounted for.
   d. The equipment numbers as supplied by the Applicant were used for each building phase, with the following additions:
      i. During the Trenching/Fine Grading phase for each building, ADI added the following equipment types: (1) grader, (2) scrapers, and (1) rubber-tired dozer. These additions were made to better match the type of work being carried out during this phase and the types of equipment potentially needed.
3. All other data entered into CalEEMod was supplied on the Applicant data request forms, i.e., site acreage, building sq. footage, parking lot area, truck deliveries, worker travel (based on manpower estimates), cut and fill values, etc.
4. Mitigations for construction emissions as enabled in CalEEMod were basically watering and speed controls for fugitive dust, and the use of Tier 3 rated engines on the majority of the proposed construction equipment and limiting of idling time when equipment is not in use.

CalEEMod was re-run for the revised periods, including the downtime periods between phases, using the equipment data and use rates as supplied by the applicant, with the slight equipment modifications noted in item 2d above. ADI added a month to each of the Phase 2 and Phase 3 periods, i.e., 17 months versus 16 months, as a conservative buffer.

The revised emissions analysis resulted in virtually no significant emissions increases or decreases as compared to the previous analysis. Table 11 presents the revised summary of construction emissions for the project for each pollutant in terms of tons/year for the maximum emissions year by pollutant.

Table 11 Revised Construction Emissions Tables from CalEEMod 7-1-2020

Scenario	NO_x	CO	VOC	SO_x	PM10	PM2.5	CO_2e
Max Const Year by Pollutant	2021	2021	2024	2021	2021/20	2021/20	NA
Max Project Emissions, Tons/Yr	3.93	4.41	4.26	0.0086	0.205 exhaust 0.294 fugitives	0.203 exhaust 0.149 fugitives	830*
Avg. Daily Emissions, Lbs	29.77	33.41	32.27	0.065	1.55 exhaust 2.27 fugitives	1.54 exhaust 1.14 fugitives	NA
BAAQMD Thresholds, Lbs/day	54	NA	54	NA	82	54	NA
Exceeds Thresholds	No	NA	No	NA	No	No	NA

Notes: PM10 and PM2.5 thresholds are exhaust only.

Construction schedule is approximately 52 months (3 Phase total), or ~1144 workdays (22 days/month).

Max construction year is 12 months at 22 days/month = 264 workdays.

*CO2e converted from MT to short tons. Total CO2e for the entire construction period is 3241 mtons (3573 short tons).

Source: ADI CalEEMod analysis, January 2020, updated June 2020.

The start date for engine operations subsequent to completion of Phase 1 (SV12) will occur at some point during the interim period between the end of Phase 1 and the start of construction of Phase 2 (SV18). The actual start date is unknown, and is materially not relevant, i.e., for purposes of emissions overlap, all of the engines are assumed to be operated under normal maintenance and readiness testing prior to the start of construction of Phase 2. The same situation is expected for the interim period between Phase 2 and Phase 3 (SV19), i.e., all of the engines for SV12 and SV18 are assumed to be operated under normal maintenance and readiness testing prior to the start of construction of Phase 3.

Based on the above, there will be an overlap of emissions during construction of Phase 2 and Phase 3. Table 2 presents a summation of construction emissions for each phase as derived from the revised CalEEMod analysis.

Table 12 Construction Phase Emissions Summary (tons per period)

Phase	NOx	CO	VOC	Sox	PM10	PM2.5
Phase 1	6.83	6.65	4.54	0.0137	Total 0.84 Exhaust 0.32	Total 0.54 Exhaust 0.31
Phase 2	5.04	5.98	4.41	0.012	Total 0.55 Exhaust 0.27	Total 0.36 Exhaust 0.27
Phase 3	4.94	5.87	4.40	0.011	Total 0.55 Exhaust 0.27	Total 0.36 Exhaust 0.27

Notes: There is no emissions overlap for Phase 1, and no overlap analysis for Phase 1 is presented herein.

Determination of the Worst Case Overlap Scenario:

Scenario 1 – is defined as the overlap of the emissions from the Phase 1 engines (13 total) and the construction emissions from Phase 2.

Scenario 2 - is defined as the overlap of the emissions from the Phase 1 and 2 engines (26 total) and the construction emissions from Phase 3.

Even though the construction emissions for Phase 2 are just slightly higher than Phase 3, the addition of the engine emissions from Phases 1 and 2 result in higher emissions overall, as compared to the summation of Phase 2 construction and Phase 1 engine emissions. Table 13 presents a recap of Phase 3 construction emissions and emissions from the engines from Phase 1 and 2.

For purposes of an overlap analysis, Scenario 2 as defined above, was chosen as the worst case. This scenario is presented herein. Attachments 1A through 1C present copies of the following:

- Emissions calculations for the normal engine operations scenarios (with DPF controls).
- Emissions calculations for the Phase 1 plus Phase 2 Engines only.
- Revised CalEEMod construction emissions input/output.

Table 13 Phase 3 Emissions for Overlap Analysis (Worst Case-Scenario 2)

Phase 3 Construction Emissions (17 Months)								
Parameter	**NO_x**	**CO**	**VOC**	**SO_x**	**PM10 Exhaust**	**PM10 Fugitives**	**PM2.5 Exhaust**	**PM2.5 Fugitives**
Tons/Period	4.94	5.87	4.40	0.011	0.27	0.28	0.27	0.09
Avg Lbs/Month	581.2	690.6	517.6	1.29	31.76	32.9	31.76	10.6
Avg Lbs/day	26.4	31.4	23.5	0.06	1.44	1.5	1.44	0.48
Avg Lbs/hour	3.30	3.94	2.94	0.0075	0.18	0.19	0.18	0.06
Engine Operations Emissions for Phase 1 and 2 During Phase 3 Construction (17 Months)								
Tons/Period	9.55	1.26	0.57	0.01	0.25	-	0.25	-
Phase 3 Construction Plus Phase 1 and 2 Engine Emissions for the 17 Month Period								
Tons/Period	14.49	7.13	4.97	0.021	0.52	0.28	0.52	0.09

Table Assumptions from CalEEMod applicant data:

1. Construction period is 6-1-26 through 12-1-27, total of 17 months.
2. 22 average work days per month, equals 374 work days.
3. 10 hours per day, 5 days per week.
4. Total CO2e for Phase 3 construction is 1003 metric tons (1103 short tons).
5. Work day is 10 hours, but accounting for lunch and daily breaks, an average work day is approximately 8 hours for purposes of emissions estimates.
6. Operations emissions for Phases 1 and 2 are for the 17-month construction period for Phase 3.

Criteria Pollutant Impacts for Scenario 2

In order to model the worst-case impact for Scenario 2, the emissions in Table 13 for the tons/period, which are based on a 17 month period, were normalized over 12 months by taking the average pounds/month and multiplying by 12 months to calculate the annualized emissions in terms of tons/year. Table 14 presents these emissions which were used in the criteria pollutant analysis as well the subsequent health risk assessment. Operational testing of the diesel backup generators at SV12 and SV18 were based on the following assumptions:

- 20 hours per year per engine, comprised of 20 hours of full load emissions based on the EPA D2 cycle emissions factors, except for DPM (consistent with BAAQMD policy)
- Six (6) engines tested per day
- Only one (1) engine tested per hour

Table 14 Normalized Annual Const Emissions for Phase 3

Parameter	NO_x	CO	VOC	SO_x	PM10 Exh	PM10 Fug	PM2.5 Exh	PM2.5 Fug
Lbs avg month *	581.2	690.6	577.6	1.29	31.76	32.9	31.76	10.6
Lbs/Yr**	6974.4	8287.2	6931.2	15.48	381.1	394.8	381.1	127.2
Lbs/day	26.42	31.39	26.25	0.059	1.44	1.5	1.44	0.48
Lbs/hr	3.30	3.92	3.28	0.0074	0.18	0.188	0.18	0,06
*based on the 17-month construction period **Avg month x 12 months Workdays per year = 22 days per month x 12 months = 264 Avg work hours per day = 8								

The same background ambient air quality levels and modeling techniques from the modeling analyses of project operating impacts were used in the construction analysis. The applicable background concentrations of NO_2, SO_2, CO, PM2.5, and PM10 from the operational modeling analyses used in the construction impact analysis are shown in the following table. The USEPA-approved model AERMOD (version 19191) was used to estimate ambient impacts from construction activities, consistent with the facility operational impact analyses and the version of AERMET (version 18081) used by BAAQMD to process the meteorological data from the San Jose and Oakland Airports. A detailed discussion of the AERMOD dispersion model and the associated processing programs AERSURFACE, AERMET, and AERMAP is included with the discussion of the modeling analyses of project operating impacts. As with the operational impact analysis, the meteorological data were processed by BAAQMD in accordance with USEPA guidance using the new USEPA default option U*.

The emission sources for the construction site were grouped into two categories: exhaust emissions and dust emissions. Combustion equipment exhaust emissions were modeled as 11 3.048-meter-high point sources (exhaust parameters of 750 Kelvins, 64.681 m/s exit velocity, and 0.1524-meter stack diameter) placed at regular 30-meter intervals around the construction area of SV19. Construction fugitive dust emissions were modeled as an area source covering the construction area with an effective plume height of 0.5 meters. Combustion and fugitive emissions were assumed to occur for 10 hours/day (7 AM to 5 PM) consistent with the expected period of onsite construction activities generating both exhaust emissions and fugitive dust. The construction impacts modeling analysis used the same receptor locations and meteorological data as used for the project operating impact analysis. A detailed discussion of the receptor locations and meteorological data is included with the discussion of the modeling analyses of project operating impacts.

Modeling Results

Based on the emission rates of operational emissions (SV12 and SV19) plus the construction emissions for SV19 of NO_x, SO_2, CO, PM2.5, and PM10, the modeling options, receptor grids, and meteorological data, AERMOD calculated the short-term and annual ambient impacts for each pollutant. As mentioned above, the modeled 1-hour, 3-hour 8-hour, and 24-hour ambient impacts are based on the worst-case daily emission rates of NO_x, SO_2, CO, PM2.5, and PM10 spread over the estimated daily hours of operation. The annual impacts are based on the annual emission rates of these pollutants. The 1-hour and annual average concentrations of NO_2 were computed using plume volume molar ratio method with a NO_2/NO_x ratio of 0.1.

The modeling analysis results are shown in Table 15 below, including the appropriate background levels and the resulting total ambient impacts. Modeled construction impacts due to facility emissions alone for all pollutants are expected to be below the most stringent state and Federal standards.

TABLE 15 MODELED MAXIMUM COMBINED OPERATIONS/CONSTRUCTION OVERLAP IMPACTS

Pollutant	Averaging Time	Maximum Construction Impacts (µg/m³)	Background (µg/m³)	Total Impact (µg/m³)	State Standards (µg/m³)	Federal Standards (µg/m³)
NO_2	1-hour C	253.4	-	270.5	339	-
	1-hour N	91.8	-	91.8	-	188
	Annual	2.85	24.5	27.2	57	100
SO_2	1-hour	0.05	18.1	18.2	655	196
	3-hour	0.03	18.1	18.1	-	1300
	24-hour	0.01	2.9	2.9	105	365
	Annual	0.005	0.5	0.5	-	80

CO	1-hour 8-hour	477.4 221.3	2,863 2,405	2,889 2,416	23,000 10,000	40,000 10,000
PM10	24-hour Annual[a]	6.1 1.6	122 23.1	125.6 24.4	50 20	150 -
PM2.5	24-hour Annual[a]	1.8 0.6	42 12.8	43.7 13.4	- 12	35 12.0
Notes: [a] Maximum Annual Arithmetic Mean.						

HRA Impacts for Scenario 2

Based on the dispersion modeling results presented above, a health risk assessment for the emissions overlap period was performed. The HRA was performed using HARP (ADMRT Version 19121). The HRA was performed for diesel particulate matter (DPM) only, as DPM is the accepted surrogate compound for whole diesel exhaust. The necessary output files from AERMOD were imported into HARP. Detailed descriptions of the risk assessment methods and support data are contained in the SPPE application document and are not repeated here. Assumptions used in the HRA analysis are as follows:

- The standard project receptor file was used. This file contained an extensive cartesian grid of receptors as well as the identified sensitive receptors included in the other project modeling analyses.
- The BAAQMD health tables were used (enabled in HARP)
- Three separate analyses were run as follows:
  a. Residential run, FAH=defaults, 2-year exposure period (see note below)
  b. Residential run, FAH=1, 2-year exposure period (see note below)
  c. Worker run, FAH=off, 2-year exposure period (see note below)
  Note: HARP does not allow fractions of years as exposure values, therefore a 2-year period was used to represent the 17-month emissions overlap.
- The PMI, MEIR, MEIW, and MEIS values were derived from the HRA output files.

Table 16 REVISED CONSTRUCTION/OPERATIONS OVERLAP RISK RESULTS

Receptor ID	Receptor, UTM	Cancer Risk	Chronic HI	Acute HI
PMI	44, 607975.6, 4121426	4.86E-5	0.0291	-
MEIR	6493, 608800, 4121050	2.31E-6	0.0014	-
MEIW	3292, 608140,4121300	1.02E-6	0.0094	-
MEIS	6588, 608900, 4120900	1.91E-6	0.0011	-

Testing hours for the overlap of construction and operation was set to 20 hours per engine.
DPM is the surrogate compound for construction equipment diesel exhaust. No acute REL has been established for DPM.
Phase 3 construction period is 17 months (HRA used 2-year exposure period.)

FAH=1 for all age groups from 3rd trimester to 16 years, for MEIR and MEIS. FAH not used for MEIW. MEIS – Los Paseos School

Requested Responses

In the course of preparing the revised air quality and public health impact assessment for the GOS project, the CEC had requested responses to the following questions be included in this updated assessment. The questions and responses are listed below.

1. Please provide detailed testing profile (e.g. duration, engine load points, and frequency) for the standby engines as requested in DR #18.

   Response: Based on the current maintenance and readiness testing period of only 20 hours per year, the Applicant is not proposing a set or detailed testing schedule. The Applicant notes that the emissions scenarios as presented cover the maximum emissions for the basic run scenarios, and the engines will not be run outside of the bounding scenarios.

2. Please provide response to questions regarding overlapping periods of construction and operation. The questions were sent on June 9, 2020 from Lisa Worrall to Scott Galati through email as follow-up questions to DR #4. The response should at least include emission calculations, criteria pollutant impacts analysis, and health risks analysis during overlapping periods.

   Response: Attachment 1 presents the emissions, air quality, and HRA analysis for the following:

   a. Revised engine operations at 20 hours/yr equipped with DPFs, and,
   b. The overlap analysis of emissions from construction and operations.

3. Since the applicant has decided to use DPFs, please provide response to DR #16 (make and model of the DPFs) and DR #17 (control efficiency of the DPFs and explanation of whether the control efficiency would change during intermittent maintenance and testing of the standby engines).

   Response: See the data presented in Attachment 2. This is the only data currently available at this time. When more specific data becomes available it will be provided to CEC staff.

4. Please update the emission calculations, criteria pollutant impacts analysis, and health risks analysis with the proposal of DPFs.

Response: The revised air quality, emissions, and HRA analysis results are presented in the attached file (Attachment 1).

5. Please update the GHG calculations for the overlapping periods of construction and operation.

   Response: The GHG emissions for the overlap period are presented in Attachment 1 per Request item #2 above.

6. If GHG emissions would change with the proposal of DPFs, please update the GHG emissions.

   Response: The GHG emissions factors used are not based upon whether the engine is or is not equipped with DPF's. The GHG emissions for the revised 20 hour/yr operating scenario are presented in Attachment 1.

Attachments

Attachment 1A	Normal engine emissions scenarios with DPF controls.
Attachment 1B	Emissions Calculations for Phase 1 and 2 Engines Only
Attachment 1C	Revised CalEEMod Construction Emissions

All modeling input and output files, support files, and HRA files are supplied in electronic format on the attached CD.

Attachment 1A

Table 1A-1 Emissions Estimates for Emergency Standby Generators

Engine Mfg:	**Cummins**	# of Units:	36	Max # of Engines Tested per Day:	6
Model #:	**QSK95-G9**			*(engines are not tested concurrently)*	
Fuel:	ULSD	**Engine OPs Data**			

														METRIC UNITs		
		SO2,											**Stack Vel,**	**Stk Diam,**	**Stk Temp,**	**Stk Vel,**
Fuel S, %wt:	0.0015	**lbs/hr**	**BHP**	**kWe**	**Load %**	**RPM**	**Fuel, gph**	**Stk Ht, ft**	**Stk Diam, in**	**Stk Temp, F**	**mmbtu/hr**	**Stk ACFM**	**f/s**	**m**	**Kelvins**	**m/s**
Fuel wt, lb/gal:	7.05	0.046953	4631	3250	100	1800	222	TBD	20	865	30.86	24336	185.9133	0.5080	735.93	56.6664
Btu/gal:	139000	0.036167	3501	2438	75	1800	171	TBD	20	735	23.77	20454	156.2570	0.5080	663.71	47.6271
Lbs S/1000 gal:	0.10575	0.026649	2371	1625	50	1800	126	TBD	20	672	17.51	16885	128.9919	0.5080	628.71	39.3167
Lbs SO2/1000 gal:	0.2115	0.015228	1240	813	25	1800	72	TBD	20	643	10.01	10587	80.8787	0.5080	612.59	24.6518
EPA Tier:	2	0.008883	562	325	10	1800	42	TBD	20	541	5.84	7187	54.9046	0.5080	555.93	16.7349
Turbocharged:	Yes		0	0	0	0	0	0	0	0	0.00	0	0.0000	0.0000	0	0.0000
Aftercooled:	Yes						Stack Exit Area (sq.ft) =		2.181662							

Scenarios	**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e lb/mmbtu**
	Emissions Factor Scenarios (all values in g/bhp-hr)						
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	4.37	0.50	0.23	0.005	0.110	0.110	163.052
Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	4.37	0.50	0.23	0.005	0.110	0.110	163.052
***	0.00	0.00	0.00	0	0.000	0.000	0

Load %	**NOx**	**CO**	**PM**	**SO2**
	Nominal *Screening* Emissions (g/hp-hr)			
100	5.70	0.30	0.040	4.599E-3
75	4.50	0.20	0.050	4.686E-3
50	3.30	0.20	0.090	5.098E-3
25	3.40	0.40	0.200	5.570E-3
10	4.60	1.30	0.300	7.169E-3
0	0.00	0.00	0.000	0.000E+0

40 CFR 89 Emissions Factors are derived from the cycle weighted load point testing per Subpart E, Appendix A for constant speed engines.

In the Screening/Refined Modeling Analyses:
Used NSPS Tier 2 EFs for CO when > Nominal
Used Cycle-weighted EFs for PM when > Nominal

APC Installed: Yes DPF

	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e lb/mmbtu**
	Controlled Emissions Factor Scenarios (all values in g/bhp-hr)						
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	4.37	0.50	0.23	0.005	0.015	0.015	163.052
Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	4.37	0.50	0.23	0.005	0.015	0.015	163.052
***	0.00	0.00	0.00	0	0.000	0.000	0

Scenario 1: **Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 24
Max Annual Runtime: 100

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	44.616	5.105	2.348	0.051	0.153	0.153	na
lbs/day	1070.789	122.516	56.357	1.225	3.675	3.675	na
TPY	2.231	0.255	0.117	0.003	0.008	0.008	251.6

All Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	1606.184	183.774	84.536	1.838	5.513	5.513	na
lbs/day	38548.412	4410.573	2028.864	44.106	132.317	132.317	na
TPY	80.31	9.19	4.23	0.092	0.276	0.276	9056.6

Scenario 2: **Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 20

Single Engine

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	44.616	5.105	2.348	0.051	0.153	0.153	na
lbs/day	44.616	5.105	2.348	0.051	0.153	0.153	na
TPY	0.446	0.051	0.023	0.001	0.002	0.002	50.3

6 Engines

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	44.616	5.105	2.348	0.051	0.153	0.153	na
lbs/day	267.697	30.629	14.089	0.306	0.919	0.919	na

All Engines

TPY	16.062	1.838	0.845	0.018	0.055	0.055	1811

Scenario 3: ***

Max Hourly Runtime: 0
Max Daily Runtime: 0
Max Annual Runtime: 0

Single Engine

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na
TPY	0.000	0.000	0.000	0.00000	0.0000	0.0000	0.000

6 Engines

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na

All Engines

TPY	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BAAQMD 120 Hrs/Yr Emissions Totals, TPY:	**NOx**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
(based on 40 CFR 89 D2 Cycle Efs for full load)	**96.37**	**11.03**	**5.07**	**0.11**	**0.33**	**0.33**	**10868**

Actual Maintenance/Readiness Testing PTE Large Engines, TPY							
(based on 40 CFR 89 D2 Cycle Efs for full load)	**16.06**	**1.84**	**0.85**	**0.02**	**0.055**	**0.055**	**1811**

Table 1A-2 Emissions Estimates for Emergency Standby Generators

Engine Mfg: **Cummins** # of Units: 3 Max # of Engines Tested per Day: 3
Model #: **QSX15-G9** *(engines are not tested concurrently)*
Fuel: ULSD **Engine OPs Data**

		SO2,											*METRIC UNITs*		
Fuel S, %wt:	0.0015	**lbs/hr**	**BHP**	**kWe**	**Load %**	**RPM**	**Fuel, gph**	**Stk Ht, ft**	**Stk Diam, in**	**Stk Temp, F**	**mmbtu/hr**	**Stk ACFM**	**Stack Vel, f/s**	**Stk Diam, m**	**Stk Temp, Kelvins**	**Stk Vel, m/s**
Fuel wt, lb/gal:	7.05	0.007191	731	500	100	1800	34	TBD	12	894	4.73	3442	73.0415	0.3048	752.04	22.2631
Btu/gal:	139000	0.005351	554	375	75	1800	25.3	TBD	12	852	3.52	2771	58.8025	0.3048	728.71	17.9230
Lbs S/1000 gal:	0.10575	0.003892	378	250	50	1800	18.4	TBD	12	828	2.56	2245	47.6404	0.3048	715.37	14.5208
Lbs SO2/1000 gal:	0.2115	0.002200	201	125	25	1800	10.4	TBD	12	719	1.45	1418	30.0909	0.3048	654.82	9.1717
EPA Tier:	2	0.001248	96	50	10	1800	5.9	TBD	12	541	0.82	955	20.2657	0.3048	555.93	6.1770
Turbocharged:	Yes	0.000000	0	0	0	0	0	0	0	0	0.00	0	0.0000	0.0000	0	0.0000
Aftercooled:	Yes							Stack Exit Area (sq.ft) =		0.785398						

	Emissions Factor Scenarios (all values in g/bhp-hr)						CO2e
Scenarios	**NOx**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.080	0.080	163.052
Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.080	0.080	163.052
***	0.00	0.00	0.00	0	0.000	0.000	0

Nominal ***Screening*** Emissions (g/hp-hr)				
Load %	**NOx**	**CO**	**PM**	**SO2**
100	4.80	0.20	0.020	4.462E-3
75	4.80	0.20	0.040	4.381E-3
50	3.60	0.20	0.050	4.670E-3
25	3.80	0.70	0.150	4.964E-3
10	4.70	6.20	0.110	5.896E-3
0	0.00	0.00	0.000	0.000E+0

40 CFR 89 Emissions Factors are derived from the cycle weighted load point testing per Subpart E, Appendix A for constant speed engines.

In the Screening/Refined Modeling Analyses:
Used NSPS Tier 2 EFs for CO when > Nominal
Used Cycle-weighted EFs for PM when > Nominal

APC Installed: Yes DPF

	Controlled Emissions Factor Scenarios (all values in g/bhp-hr)						CO2e
	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.015	0.015	163.052
Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.015	0.015	163.052
***	0.00	0.00	0.00	0	0.000	0.000	0

Scenario 1: **Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 24
Max Annual Runtime: 100

Single Engine

	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	5.979	0.645	0.306	0.008	0.024	0.024	na
lbs/day	143.496	15.471	7.349	0.193	0.580	0.580	na
TPY	0.299	0.032	0.015	0.000	0.001	0.001	38.5

All Engines

	Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	17.937	1.934	0.919	0.024	0.073	0.073	na
lbs/day	430.487	46.414	22.047	0.580	1.741	1.741	na

All Engines

TPY	0.897	0.097	0.046	0.001	0.004	0.004	115.6

Scenario 2: **Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 20

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	5.979	0.645	0.306	0.008	0.024	0.024	na
lbs/day	5.979	0.645	0.306	0.008	0.024	0.024	na
TPY	0.060	0.006	0.003	0.000	0.000	0.000	7.706

3 Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	5.979	0.645	0.306	0.008	0.024	0.024	na
lbs/day	17.937	1.934	0.919	0.024	0.073	0.073	na

All Engines

TPY	0.179	0.019	0.009	0.0002	0.0007	0.0007	23.118

Scenario 3: ***

Max Hourly Runtime: 0
Max Daily Runtime: 0
Max Annual Runtime: 0

Single Engine

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na
TPY	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.000

3 Engines

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na

All Engines

TPY	0.000	0.000	0.000	0.000	0.0000	0.0000	0.000

BAAQMD 120 Hrs/Yr Emissions Totals, TPY:	**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
(based on 40 CFR 89 D2 Cycle Efs for full load)	**1.076**	**0.116**	**0.055**	**0.001**	**0.004**	**0.004**	**138.705**
BAAQMD Policy Emissions Totals (120 hrs/yr)							
Large and Small Engines Combined, TPY	**97.45**	**11.14**	**5.13**	**0.11**	**0.335**	**0.335**	**11007**
(based on 40 CFR 89 D2 Cycle Efs for full load)							
Actual Maintenance/Readiness Testing PTE							
Small Engines, TPY	**0.1794**	**0.0193**	**0.0092**	**0.0002**	**0.0007**	**0.0007**	**23**
(based on 40 CFR 89 D2 Cycle Efs for full load)							
Actual Maintenance/Readiness Testing PTE							
Large and Small Engines Combined, TPY	**16.24**	**1.86**	**0.85**	**0.019**	**0.056**	**0.056**	**1834**
(based on 40 CFR 89 D2 Cycle Efs for full load)							

Attachment 1B

Table 1B-1 Emissions Estimates for Emergency Standby Generators

Engine Mfg:	**Cummins**	# of Units:	24	Max # of Engines Tested per Day:	4
Model #:	**QSK95-G9**			*(engines are not tested concurrently)*	
Fuel:	ULSD	**Engine OPs Data**			

		SO2,											*METRIC UNITs*		
												Stack Vel,	Stk Diam,	Stk Temp,	Stk Vel,
Fuel S, %wt:	0.0015	**lbs/hr**	**BHP**	**kWe**	**Load %**	**RPM**	**Fuel, gph**	**Stk Ht, ft**	**Stk Diam, in**	**Stk Temp, F**	**mmbtu/hr**	**Stk ACFM**	**f/s**	**m**	**Kelvins**	**m/s**
Fuel wt, lb/gal:	7.05	0.046953	4631	3250	100	1800	222	TBD	20	865	30.86	24336	185.9133	0.5080	735.93	56.6664
Btu/gal:	139000	0.036167	3501	2438	75	1800	171	TBD	20	735	23.77	20454	156.2570	0.5080	663.71	47.6271
Lbs S/1000 gal:	0.10575	0.026649	2371	1625	50	1800	126	TBD	20	672	17.51	16885	128.9919	0.5080	628.71	39.3167
Lbs SO2/1000 gal:	0.2115	0.015228	1240	813	25	1800	72	TBD	20	643	10.01	10587	80.8787	0.5080	612.59	24.6518
EPA Tier:	2	0.008883	562	325	10	1800	42	TBD	20	541	5.84	7187	54.9046	0.5080	555.93	16.7349
Turbocharged:	Yes		0	0	0	0	0	0	0	0	0.00	0	0.0000	0.0000	0	0.0000
Aftercooled:	Yes						Stack Exit Area (sq.ft) =		2.181662							

	Emissions Factor Scenarios (all values in g/bhp-hr)						CO2e
Scenarios	**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	4.37	0.50	0.23	0.005	0.110	0.110	163.052
Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	4.37	0.50	0.23	0.005	0.110	0.110	163.052
***	0.00	0.00	0.00	0	0.000	0.000	0

Nominal ***Screening*** Emissions (g/hp-hr)				
Load %	**NOx**	**CO**	**PM**	**SO2**
100	5.70	0.30	0.040	4.599E-3
75	4.50	0.20	0.050	4.686E-3
50	3.30	0.20	0.090	5.098E-3
25	3.40	0.40	0.200	5.570E-3
10	4.60	1.30	0.300	7.169E-3
0	0.00	0.00	0.000	0.000E+0

40 CFR 89 Emissions Factors are derived from the cycle weighted load point testing per Subpart E, Appendix A for constant speed engines.

In the Screening/Refined Modeling Analyses:
Used NSPS Tier 2 EFs for CO when > Nominal
Used Cycle-weighted EFs for PM when > Nominal

APC Installed: Yes DPF

	Controlled Emissions Factor Scenarios (all values in g/bhp-hr)						CO2e
	NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	4.37	0.50	0.23	0.005	0.015	0.015	163.052
Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	4.37	0.50	0.23	0.005	0.015	0.015	163.052
***	0.00	0.00	0.00	0	0.000	0.000	0

Scenario 1: **Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 24
Max Annual Runtime: 100

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	44.616	5.105	2.348	0.051	0.153	0.153	na
lbs/day	1070.789	122.516	56.357	1.225	3.675	3.675	na
TPY	2.231	0.255	0.117	0.003	0.008	0.008	251.6

All Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	1070.789	122.516	56.357	1.225	3.675	3.675	na
lbs/day	25698.941	2940.382	1352.576	29.404	88.211	88.211	na

All Engines

TPY	53.54	6.13	2.82	0.061	0.184	0.184	6037.8

Scenario 2: **Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 20

Single Engine

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	44.616	5.105	2.348	0.051	0.153	0.153	na
lbs/day	44.616	5.105	2.348	0.051	0.153	0.153	na
TPY	0.446	0.051	0.023	0.001	0.002	0.002	50.3

6 Engines

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	44.616	5.105	2.348	0.051	0.153	0.153	na
lbs/day	178.465	20.419	9.393	0.204	0.613	0.613	na

All Engines

TPY	10.708	1.225	0.564	0.012	0.037	0.037	1208

Scenario 3: ***

Max Hourly Runtime: 0
Max Daily Runtime: 0
Max Annual Runtime: 0

Single Engine

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na
TPY	0.000	0.000	0.000	0.00000	0.0000	0.0000	0.000

6 Engines

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na

All Engines

TPY	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BAAQMD 120 Hrs/Yr Emissions Totals, TPY:	**NOx**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
(based on 40 CFR 89 D2 Cycle Efs for full load)	**64.25**	**7.35**	**3.38**	**0.07**	**0.22**	**0.22**	**7245**

Actual Maintenance/Readiness Testing PTE Large Engines, TPY							
(based on 40 CFR 89 D2 Cycle Efs for full load)	**10.71**	**1.23**	**0.56**	**0.01**	**0.037**	**0.037**	**1208**

Table 1B-2 Emissions Estimates for Emergency Standby Generators

Engine Mfg:	**Cummins**	# of Units:	2	Max # of Engines Tested per Day:	2
Model #:	**QSX15-G9**			*(engines are not tested concurrently)*	
Fuel:	ULSD	**Engine OPs Data**			

														METRIC UNITs		
Fuel S, %wt:	0.0015	**SO2, lbs/hr**	**BHP**	**kWe**	**Load %**	**RPM**	**Fuel, gph**	**Stk Ht, ft**	**Stk Diam, in**	**Stk Temp, F**	**mmbtu/hr**	**Stk ACFM**	**Stack Vel, f/s**	**Stk Diam, m**	**Stk Temp, Kelvins**	**Stk Vel, m/s**
Fuel wt, lb/gal:	7.05	0.007191	731	500	100	1800	34	TBD	12	894	4.73	3442	73.0415	0.3048	752.04	22.2631
Btu/gal:	139000	0.005351	554	375	75	1800	25.3	TBD	12	852	3.52	2771	58.8025	0.3048	728.71	17.9230
Lbs S/1000 gal:	0.10575	0.003892	378	250	50	1800	18.4	TBD	12	828	2.56	2245	47.6404	0.3048	715.37	14.5208
Lbs SO2/1000 gal:	0.2115	0.002200	201	125	25	1800	10.4	TBD	12	719	1.45	1418	30.0909	0.3048	654.82	9.1717
EPA Tier:	2	0.001248	96	50	10	1800	5.9	TBD	12	541	0.82	955	20.2657	0.3048	555.93	6.1770
Turbocharged:	Yes	0.000000	0	0	0	0	0	0	0	0	0.00	0	0.0000	0.0000	0	0.0000
Aftercooled:	Yes						Stack Exit Area (sq.ft) =		0.785398							

Scenarios	**Emissions Factor Scenarios (all values in g/bhp-hr) NOx**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.080	0.080	163.052
Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.080	0.080	163.052
***	0.00	0.00	0.00	0	0.000	0.000	0

Nominal *Screening* Emissions (g/hp-hr)				
Load %	**NOx**	**CO**	**PM**	**SO2**
100	4.80	0.20	0.020	4.462E-3
75	4.80	0.20	0.040	4.381E-3
50	3.60	0.20	0.050	4.670E-3
25	3.80	0.70	0.150	4.964E-3
10	4.70	6.20	0.110	5.896E-3
0	0.00	0.00	0.000	0.000E+0

40 CFR 89 Emissions Factors are derived from the cycle weighted load point testing per Subpart E, Appendix A for constant speed engines.

In the Screening/Refined Modeling Analyses:
Used NSPS Tier 2 EFs for CO when > Nominal
Used Cycle-weighted EFs for PM when > Nominal

APC Installed: Yes DPF

	Controlled Emissions Factor Scenarios (all values in g/bhp-hr) NOx	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e lb/mmbtu**
Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.015	0.015	163.052
Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load	3.71	0.40	0.19	0.005	0.015	0.015	163.052
***	0.00	0.00	0.00	0	0.000	0.000	0

Scenario 1: **Declared Emergency Ops, 100 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 24
Max Annual Runtime: 100

	Single Engine Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	5.979	0.645	0.306	0.008	0.024	0.024	na
lbs/day	143.496	15.471	7.349	0.193	0.580	0.580	na
TPY	0.299	0.032	0.015	0.000	0.001	0.001	38.5
	All Engines Nox	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
lbs/hr	11.958	1.289	0.612	0.016	0.048	0.048	na
lbs/day	286.992	30.942	14.698	0.387	1.160	1.160	na
TPY	0.598	0.064	0.031	0.001	0.002	0.002	77.1

Scenario 2: **Maint/Readiness Testing, 20 hrs/yr, 40CFR89 D2 Cycle EFs, 100% Load**

Max Hourly Runtime: 1
Max Daily Runtime: 1
Max Annual Runtime: 20

Single Engine

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	5.979	0.645	0.306	0.008	0.024	0.024	na
lbs/day	5.979	0.645	0.306	0.008	0.024	0.024	na
TPY	0.060	0.006	0.003	0.000	0.000	0.000	7.706

3 Engines

	Nox	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	5.979	0.645	0.306	0.008	0.024	0.024	na
lbs/day	11.958	1.289	0.612	0.016	0.048	0.048	na

All Engines

TPY	0.120	0.013	0.006	0.0002	0.0005	0.0005	15.412

Scenario 3: ***

Max Hourly Runtime: 0
Max Daily Runtime: 0
Max Annual Runtime: 0

Single Engine

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na
TPY	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.000

3 Engines

	NOx	CO	VOC	SO2	PM10	PM2.5	CO2e
lbs/hr	0.000	0.000	0.000	0.000	0.000	0.000	na
lbs/day	0.000	0.000	0.000	0.000	0.000	0.000	na

All Engines

TPY	0.000	0.000	0.000	0.000	0.0000	0.0000	0.000

BAAQMD 120 Hrs/Yr Emissions Totals, TPY:	**Nox**	**CO**	**VOC**	**SO2**	**PM10**	**PM2.5**	**CO2e**
(based on 40 CFR 89 D2 Cycle Efs for full load)	**0.717**	**0.077**	**0.037**	**0.001**	**0.003**	**0.003**	**92.470**

BAAQMD Policy Emissions Totals (120 hrs/yr)							
Large and Small Engines Combined, TPY	**64.96**	**7.43**	**3.42**	**0.07**	**0.223**	**0.223**	**7338**
(based on 40 CFR 89 D2 Cycle Efs for full load)							

Actual Maintenance/Readiness Testing PTE							
Small Engines, TPY	**0.1196**	**0.0129**	**0.0061**	**0.0002**	**0.0005**	**0.0005**	**15**
(based on 40 CFR 89 D2 Cycle Efs for full load)							

Actual Maintenance/Readiness Testing PTE							
Large and Small Engines Combined, TPY	**10.83**	**1.24**	**0.57**	**0.012**	**0.037**	**0.037**	**1223**
(based on 40 CFR 89 D2 Cycle Efs for full load)							

Attachment 1C

Equinix Data Center

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Industrial Park	547.05	1000sqft	18.00	784,080.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2028
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Project setup information

Land Use - Project design area is smaller than the project site.

Construction Phase - Rev Data supplied by Applicant

Off-road Equipment - Best estimates from Applicant

Off-road Equipment - Best estimates from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best Estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Off-road Equipment - Best estimate from Applicant

Trips and VMT - Build trip rate based on avg 150 workers on site per day, and coating trips assumed same value as paving. Vendor trips assumed to be avg of 20 deliveries per const day. Vendor trip miles assumed at 15.

On-road Fugitive Dust - Defaults used

Grading - Data from Applicant and defaults

Architectural Coating - Defaults used due to low VOC coating use.

Vehicle Trips - Trip rates based on actual employees per shift from Applicant.

Road Dust - Defaults

Consumer Products - Defaults

Area Coating - Defaults

Energy Use -

Solid Waste - Based on 1 ton/week/bldg.

Construction Off-road Equipment Mitigation - Tier 3 engines assumed for the const period 2020-2024.

Equinix Data Center - Santa Clara County, Annual

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	16.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
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tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3

Equinix Data Center - Santa Clara County, Annual

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
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tblConstructionPhase	NumDays	300.00	293.00
tblConstructionPhase	NumDays	300.00	230.00
tblConstructionPhase	NumDays	300.00	294.00
tblConstructionPhase	NumDays	30.00	45.00
tblConstructionPhase	NumDays	30.00	41.00
tblConstructionPhase	NumDays	30.00	43.00
tblConstructionPhase	NumDays	20.00	32.00
tblConstructionPhase	NumDays	20.00	31.00
tblConstructionPhase	NumDays	20.00	34.00
tblConstructionPhase	NumDays	10.00	66.00
tblGrading	AcresOfGrading	110.00	3.29
tblGrading	AcresOfGrading	102.50	2.93
tblGrading	AcresOfGrading	107.50	2.93
tblGrading	AcresOfGrading	154.69	18.00
tblGrading	MaterialExported	0.00	17,000.00
tblGrading	MaterialImported	0.00	10,000.00
tblLandUse	LandUseSquareFeet	547,050.00	784,080.00
tblLandUse	LotAcreage	12.56	18.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
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tblOffRoadEquipment	UsageHours	8.00	7.50
tblOffRoadEquipment	UsageHours	8.00	7.50
tblOffRoadEquipment	UsageHours	8.00	7.50

tblOffRoadEquipment	UsageHours	8.00	7.50
tblOffRoadEquipment	UsageHours	8.00	7.50
tblOffRoadEquipment	UsageHours	8.00	7.50
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tblOffRoadEquipment	UsageHours	8.00	7.50
tblOffRoadEquipment	UsageHours	8.00	7.50
tblOffRoadEquipment	UsageHours	8.00	7.00
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tblOffRoadEquipment	UsageHours	8.00	7.00
tblSolidWaste	SolidWasteGenerationRate	678.34	156.00
tblTripsAndVMT	VendorTripLength	7.30	15.00
tblTripsAndVMT	VendorTripLength	7.30	15.00
tblTripsAndVMT	VendorTripLength	7.30	15.00
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tblTripsAndVMT	VendorTripLength	7.30	15.00
tblTripsAndVMT	VendorTripLength	7.30	15.00
tblTripsAndVMT	VendorTripLength	7.30	15.00
tblTripsAndVMT	VendorTripLength	7.30	15.00

tblTripsAndVMT	VendorTripLength	7.30	15.00
tblTripsAndVMT	VendorTripLength	7.30	15.00
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tblTripsAndVMT	WorkerTripNumber	20.00	10.00
tblTripsAndVMT	WorkerTripNumber	329.00	150.00
tblTripsAndVMT	WorkerTripNumber	66.00	13.00
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tblTripsAndVMT	WorkerTripNumber	329.00	150.00
tblTripsAndVMT	WorkerTripNumber	66.00	13.00
tblVehicleTrips	ST_TR	2.49	0.08
tblVehicleTrips	SU_TR	0.73	0.28
tblVehicleTrips	WD_TR	6.83	0.03

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					
2020	0.2542	3.0593	1.6230	4.4300e-003	0.6072	0.1181	0.7254	0.3187	0.1087	0.4274						403.7887
2021	0.4860	4.3288	4.0450	8.5800e-003	0.2872	0.1824	0.4696	0.1118	0.1716	0.2834						754.2329
2022	4.1237	0.3102	0.3899	7.2000e-004	0.0106	0.0141	0.0247	2.8500e-003	0.0132	0.0160						63.0291
2023	0.2467	2.1733	2.2645	5.1200e-003	0.2123	0.0848	0.2970	0.0933	0.0794	0.1727						450.5774
2024	4.3756	2.4076	3.0191	6.4700e-003	0.1385	0.0881	0.2266	0.0374	0.0832	0.1206						567.1162
2026	0.2201	1.8992	2.2006	5.1200e-003	0.2156	0.0679	0.2834	0.0950	0.0635	0.1585						450.2563
2027	4.3522	2.2356	2.9264	6.3000e-003	0.1377	0.0767	0.2144	0.0372	0.0724	0.1096						552.3944
Maximum	**4.3756**	**4.3288**	**4.0450**	**8.5800e-003**	**0.6072**	**0.1824**	**0.7254**	**0.3187**	**0.1716**	**0.4274**						**754.2329**

2.1 Overall Construction

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					
2020	0.1682	2.5808	1.8044	4.4300e-003	0.2937	0.0949	0.3886	0.1490	0.0906	0.2396						403.7884
2021	0.2603	3.9290	4.4050	8.5800e-003	0.2184	0.2045	0.4229	0.0744	0.2027	0.2771						754.2322
2022	4.1071	0.3196	0.4400	7.2000e-004	0.0106	0.0183	0.0289	2.8500e-003	0.0183	0.0211						63.0290
2023	0.1541	2.3123	2.5978	5.1200e-003	0.1402	0.1183	0.2585	0.0541	0.1169	0.1710						450.5770
2024	4.2565	2.7252	3.3823	6.4700e-003	0.1385	0.1550	0.2935	0.0374	0.1549	0.1923						567.1157
2026	0.1477	2.2514	2.5703	5.1200e-003	0.1417	0.1163	0.2580	0.0548	0.1151	0.1700						450.2559
2027	4.2496	2.6890	3.3008	6.3000e-003	0.1377	0.1537	0.2913	0.0372	0.1536	0.1908						552.3940
Maximum	**4.2565**	**3.9290**	**4.4050**	**8.5800e-003**	**0.2937**	**0.2045**	**0.4229**	**0.1490**	**0.2027**	**0.2771**						**754.2322**

	ROG	NOx	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	**5.09**	**-2.40**	**-12.34**	**0.00**	**32.82**	**-36.20**	**13.36**	**41.15**	**-43.95**	**2.04**	**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)
3	**7-8-2020**	**10-7-2020**	0.2512	0.2085
4	**10-8-2020**	**1-7-2021**	3.1710	2.6353
5	**1-8-2021**	**4-7-2021**	1.3672	1.1848
6	**4-8-2021**	**7-7-2021**	1.1287	0.9836

7	**7-8-2021**	**10-7-2021**	1.1415	0.9948
8	**10-8-2021**	**1-7-2022**	1.1386	0.9993
9	**1-8-2022**	**4-7-2022**	4.2614	4.2572
14	**4-8-2023**	**7-7-2023**	0.5245	0.5389
15	**7-8-2023**	**10-7-2023**	1.0376	1.0572
16	**10-8-2023**	**1-7-2024**	0.9433	0.9608
17	**1-8-2024**	**4-7-2024**	0.8868	0.9475
18	**4-8-2024**	**7-7-2024**	0.8833	0.9441
19	**7-8-2024**	**10-7-2024**	0.7432	0.7967
20	**10-8-2024**	**1-7-2025**	4.1451	4.1634
26	**4-8-2026**	**7-7-2026**	0.4266	0.4825
27	**7-8-2026**	**10-7-2026**	0.8967	1.0153
28	**10-8-2026**	**1-7-2027**	0.8418	0.9531
29	**1-8-2027**	**4-7-2027**	0.8212	0.9301
30	**4-8-2027**	**7-7-2027**	0.8273	0.9374
31	**7-8-2027**	**9-30-2027**	0.6755	0.7690
		Highest	4.2614	4.2572

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.4715	5.0000e-005	5.0100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						0.0104
Energy	0.0692	0.6292	0.5285	3.7800e-003		0.0478	0.0478		0.0478	0.0478						4,771.9361
Mobile	7.8800e-003	0.0315	0.0964	3.8000e-004	0.0389	2.9000e-004	0.0392	0.0104	2.7000e-004	0.0107						34.6160
Waste						0.0000	0.0000		0.0000	0.0000						78.4526
Water						0.0000	0.0000		0.0000	0.0000						372.1092
Total	**3.5486**	**0.6607**	**0.6299**	**4.1600e-003**	**0.0389**	**0.0481**	**0.0870**	**0.0104**	**0.0481**	**0.0585**						**5,257.1244**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.4715	5.0000e-005	5.0100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						0.0104
Energy	0.0692	0.6292	0.5285	3.7800e-003		0.0478	0.0478		0.0478	0.0478						4,771.9361
Mobile	7.8800e-003	0.0315	0.0964	3.8000e-004	0.0389	2.9000e-004	0.0392	0.0104	2.7000e-004	0.0107						34.6160
Waste						0.0000	0.0000		0.0000	0.0000						78.4526
Water						0.0000	0.0000		0.0000	0.0000						372.1092
Total	**3.5486**	**0.6607**	**0.6299**	**4.1600e-003**	**0.0389**	**0.0481**	**0.0870**	**0.0104**	**0.0481**	**0.0585**						**5,257.1244**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	10/1/2020	12/31/2020	5	66	18 acre site prep
2	SV12 Fine Grade	Grading	1/1/2021	2/28/2021	5	41	
3	SV12 Build	Building Construction	3/1/2021	1/15/2022	5	230	
4	SV12 Pave	Paving	1/16/2022	2/28/2022	5	31	
5	SV12 Coat	Architectural Coating	2/15/2022	3/31/2022	5	33	
6	SV18 Fine Grade	Grading	6/1/2023	7/31/2023	5	43	
7	SV18 Build	Building Construction	8/1/2023	9/15/2024	5	294	
8	SV18 Pave	Paving	9/16/2024	10/31/2024	5	34	
9	SV18 Coat	Architectural Coating	10/15/2024	11/30/2024	5	34	
10	SV19 Fine Grade	Grading	6/1/2026	7/31/2026	5	45	
11	SV19 Build	Building Construction	8/1/2026	9/15/2027	5	293	
12	SV19 Pave	Paving	9/16/2027	10/31/2027	5	32	
13	SV19 Coat	Architectural Coating	10/15/2027	12/1/2027	5	34	

Acres of Grading (Site Preparation Phase): 18

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,176,120; Non-Residential Outdoor: 392,040; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Excavators	2	7.50	158	0.38
Site Preparation	Graders	1	7.50	187	0.41
Site Preparation	Off-Highway Trucks	1	7.00	402	0.38

Site Preparation	Rubber Tired Dozers	3	7.50	247	0.40
Site Preparation	Scrapers	2	7.50	367	0.48
Site Preparation	Tractors/Loaders/Backhoes	4	7.50	97	0.37
SV12 Fine Grade	Excavators	2	7.50	158	0.38
SV12 Fine Grade	Graders	1	8.00	187	0.41
SV12 Fine Grade	Off-Highway Trucks	1		402	0.38
SV12 Fine Grade	Rubber Tired Dozers	1	8.00	247	0.40
SV12 Fine Grade	Scrapers	2	8.00	367	0.48
SV12 Fine Grade	Tractors/Loaders/Backhoes	1	7.50	97	0.37
SV12 Build	Aerial Lifts	6	7.00	63	0.31
SV12 Build	Cranes	2	7.50	231	0.29
SV12 Build	Forklifts	2	6.00	89	0.20
SV12 Build	Generator Sets	1	8.00	84	0.74
SV12 Build	Tractors/Loaders/Backhoes	3	7.50	97	0.37
SV12 Build	Welders	4	7.00	46	0.45
SV12 Pave	Pavers	1	7.50	130	0.42
SV12 Pave	Paving Equipment	2	7.50	132	0.36
SV12 Pave	Rollers	2	7.50	80	0.38
SV12 Coat	Aerial Lifts	2	6.00	63	0.31
SV12 Coat	Air Compressors	1	6.00	78	0.48
SV18 Fine Grade	Excavators	2	7.50	158	0.38
SV18 Fine Grade	Graders	1	8.00	187	0.41
SV18 Fine Grade	Off-Highway Trucks	1	7.50	402	0.38
SV18 Fine Grade	Rubber Tired Dozers	1	8.00	247	0.40
SV18 Fine Grade	Scrapers	2	8.00	367	0.48
SV18 Fine Grade	Tractors/Loaders/Backhoes	1	7.50	97	0.37
SV18 Build	Aerial Lifts	6	7.00	63	0.31

SV18 Build	Cranes	2	7.50	231	0.29
SV18 Build	Forklifts	2	6.00	89	0.20
SV18 Build	Generator Sets	1	8.00	84	0.74
SV18 Build	Tractors/Loaders/Backhoes	3	7.50	97	0.37
SV18 Build	Welders	4	7.00	46	0.45
SV18 Pave	Pavers	1	7.50	130	0.42
SV18 Pave	Paving Equipment	2	7.50	132	0.36
SV18 Pave	Rollers	2	7.50	80	0.38
SV18 Coat	Aerial Lifts	2	6.00	63	0.31
SV18 Coat	Air Compressors	1	6.00	78	0.48
SV19 Fine Grade	Excavators	2	7.50	158	0.38
SV19 Fine Grade	Graders	1	8.00	187	0.41
SV19 Fine Grade	Off-Highway Trucks	1	7.50	402	0.38
SV19 Fine Grade	Rubber Tired Dozers	1	8.00	247	0.40
SV19 Fine Grade	Scrapers	2	8.00	367	0.48
SV19 Fine Grade	Tractors/Loaders/Backhoes	1	7.50	97	0.37
SV19 Build	Aerial Lifts	6	7.00	63	0.31
SV19 Build	Cranes	2	7.50	231	0.29
SV19 Build	Forklifts	2	6.00	89	0.20
SV19 Build	Generator Sets	1	8.00	84	0.74
SV19 Build	Tractors/Loaders/Backhoes	3	7.50	97	0.37
SV19 Build	Welders	4	7.00	46	0.45
SV19 Pave	Pavers	1	7.50	130	0.42
SV19 Pave	Paving Equipment	2	7.50	132	0.36
SV19 Pave	Rollers	2	7.50	80	0.38
SV19 Coat	Aerial Lifts	2	6.00	63	0.31
SV19 Coat	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	13	33.00	0.00	3,375.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV12 Fine Grade	8	10.00	0.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV12 Build	18	150.00	20.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV12 Pave	5	13.00	0.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV12 Coat	3	13.00	0.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV18 Fine Grade	8	10.00	0.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV18 Build	18	150.00	20.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV18 Pave	5	13.00	0.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV18 Coat	3	13.00	0.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV19 Fine Grade	8	10.00	0.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV19 Build	18	150.00	20.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV19 Pave	5	13.00	0.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT
SV19 Coat	3	13.00	0.00	0.00	10.80	15.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 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					
Fugitive Dust					0.5700	0.0000	0.5700	0.3085	0.0000	0.3085						0.0000
Off-Road	0.2366	2.5670	1.4954	3.0200e-003		0.1165	0.1165		0.1072	0.1072						267.5231
Total	**0.2366**	**2.5670**	**1.4954**	**3.0200e-003**	**0.5700**	**0.1165**	**0.6865**	**0.3085**	**0.1072**	**0.4157**						**267.5231**

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	0.0140	0.4897	0.1003	1.3300e-003	0.0286	1.5900e-003	0.0302	7.8700e-003	1.5200e-003	9.3900e-003						128.8542
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.6200e-003	2.6000e-003	0.0273	8.0000e-005	8.6400e-003	6.0000e-005	8.6900e-003	2.3000e-003	5.0000e-005	2.3500e-003						7.4114
Total	**0.0176**	**0.4923**	**0.1275**	**1.4100e-003**	**0.0373**	**1.6500e-003**	**0.0389**	**0.0102**	**1.5700e-003**	**0.0117**						**136.2655**

3.2 Site Preparation - 2020

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					0.2565	0.0000	0.2565	0.1388	0.0000	0.1388						0.0000
Off-Road	0.1505	2.0885	1.6769	3.0200e-003		0.0932	0.0932		0.0891	0.0891						267.5228
Total	**0.1505**	**2.0885**	**1.6769**	**3.0200e-003**	**0.2565**	**0.0932**	**0.3497**	**0.1388**	**0.0891**	**0.2279**						**267.5228**

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	0.0140	0.4897	0.1003	1.3300e-003	0.0286	1.5900e-003	0.0302	7.8700e-003	1.5200e-003	9.3900e-003						128.8542
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	3.6200e-003	2.6000e-003	0.0273	8.0000e-005	8.6400e-003	6.0000e-005	8.6900e-003	2.3000e-003	5.0000e-005	2.3500e-003						7.4114
Total	**0.0176**	**0.4923**	**0.1275**	**1.4100e-003**	**0.0373**	**1.6500e-003**	**0.0389**	**0.0102**	**1.5700e-003**	**0.0117**						**136.2655**

3.3 SV12 Fine Grade - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1250	0.0000	0.1250	0.0680	0.0000	0.0680						0.0000
Off-Road	0.0813	0.9044	0.5754	1.1900e-003		0.0380	0.0380		0.0350	0.0350						105.4521
Total	**0.0813**	**0.9044**	**0.5754**	**1.1900e-003**	**0.1250**	**0.0380**	**0.1630**	**0.0680**	**0.0350**	**0.1030**						**105.4521**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.3000e-004	4.4000e-004	4.6900e-003	1.0000e-005	1.6300e-003	1.0000e-005	1.6400e-003	4.3000e-004	1.0000e-005	4.4000e-004						1.3467
Total	**6.3000e-004**	**4.4000e-004**	**4.6900e-003**	**1.0000e-005**	**1.6300e-003**	**1.0000e-005**	**1.6400e-003**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**						**1.3467**

3.3 SV12 Fine Grade - 2021

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					0.0563	0.0000	0.0563	0.0306	0.0000	0.0306						0.0000
Off-Road	0.0594	0.7918	0.6268	1.1900e-003		0.0330	0.0330		0.0313	0.0313						105.4519
Total	**0.0594**	**0.7918**	**0.6268**	**1.1900e-003**	**0.0563**	**0.0330**	**0.0893**	**0.0306**	**0.0313**	**0.0619**						**105.4519**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.3000e-004	4.4000e-004	4.6900e-003	1.0000e-005	1.6300e-003	1.0000e-005	1.6400e-003	4.3000e-004	1.0000e-005	4.4000e-004						1.3467
Total	**6.3000e-004**	**4.4000e-004**	**4.6900e-003**	**1.0000e-005**	**1.6300e-003**	**1.0000e-005**	**1.6400e-003**	**4.3000e-004**	**1.0000e-005**	**4.4000e-004**						**1.3467**

3.4 SV12 Build - 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	0.3419	3.0573	2.9998	5.0800e-003		0.1426	0.1426		0.1350	0.1350						433.6981
Total	**0.3419**	**3.0573**	**2.9998**	**5.0800e-003**		**0.1426**	**0.1426**		**0.1350**	**0.1350**						**433.6981**

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
Vendor	0.0114	0.3314	0.0877	1.1000e-003	0.0297	9.7000e-004	0.0307	8.5700e-003	9.3000e-004	9.5000e-003						105.3450
Worker	0.0508	0.0352	0.3775	1.2000e-003	0.1309	8.2000e-004	0.1317	0.0348	7.6000e-004	0.0356						108.3910
Total	**0.0622**	**0.3666**	**0.4651**	**2.3000e-003**	**0.1605**	**1.7900e-003**	**0.1623**	**0.0434**	**1.6900e-003**	**0.0451**						**213.7360**

3.4 SV12 Build - 2021

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	0.1381	2.7701	3.3083	5.0800e-003		0.1697	0.1697		0.1697	0.1697						433.6976
Total	**0.1381**	**2.7701**	**3.3083**	**5.0800e-003**		**0.1697**	**0.1697**		**0.1697**	**0.1697**						**433.6976**

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
Vendor	0.0114	0.3314	0.0877	1.1000e-003	0.0297	9.7000e-004	0.0307	8.5700e-003	9.3000e-004	9.5000e-003						105.3450
Worker	0.0508	0.0352	0.3775	1.2000e-003	0.1309	8.2000e-004	0.1317	0.0348	7.6000e-004	0.0356						108.3910
Total	**0.0622**	**0.3666**	**0.4651**	**2.3000e-003**	**0.1605**	**1.7900e-003**	**0.1623**	**0.0434**	**1.6900e-003**	**0.0451**						**213.7360**

3.4 SV12 Build - 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	0.0141	0.1257	0.1346	2.3000e-004		5.5500e-003	5.5500e-003		5.2500e-003	5.2500e-003						19.7176
Total	**0.0141**	**0.1257**	**0.1346**	**2.3000e-004**		**5.5500e-003**	**5.5500e-003**		**5.2500e-003**	**5.2500e-003**						**19.7176**

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
Vendor	4.9000e-004	0.0141	3.7700e-003	5.0000e-005	1.3500e-003	4.0000e-005	1.3900e-003	3.9000e-004	4.0000e-005	4.3000e-004						4.7420
Worker	2.1600e-003	1.4400e-003	0.0158	5.0000e-005	5.9500e-003	4.0000e-005	5.9800e-003	1.5800e-003	3.0000e-005	1.6200e-003						4.7477
Total	**2.6500e-003**	**0.0155**	**0.0195**	**1.0000e-004**	**7.3000e-003**	**8.0000e-005**	**7.3700e-003**	**1.9700e-003**	**7.0000e-005**	**2.0500e-003**						**9.4897**

3.4 SV12 Build - 2022

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	6.2800e-003	0.1259	0.1504	2.3000e-004		7.7100e-003	7.7100e-003		7.7100e-003	7.7100e-003						19.7176
Total	**6.2800e-003**	**0.1259**	**0.1504**	**2.3000e-004**		**7.7100e-003**	**7.7100e-003**		**7.7100e-003**	**7.7100e-003**						**19.7176**

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
Vendor	4.9000e-004	0.0141	3.7700e-003	5.0000e-005	1.3500e-003	4.0000e-005	1.3900e-003	3.9000e-004	4.0000e-005	4.3000e-004						4.7420
Worker	2.1600e-003	1.4400e-003	0.0158	5.0000e-005	5.9500e-003	4.0000e-005	5.9800e-003	1.5800e-003	3.0000e-005	1.6200e-003						4.7477
Total	**2.6500e-003**	**0.0155**	**0.0195**	**1.0000e-004**	**7.3000e-003**	**8.0000e-005**	**7.3700e-003**	**1.9700e-003**	**7.0000e-005**	**2.0500e-003**						**9.4897**

3.5 SV12 Pave - 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	0.0130	0.1312	0.1700	2.6000e-004		6.8000e-003	6.8000e-003		6.2600e-003	6.2600e-003						23.2879
Paving	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0130**	**0.1312**	**0.1700**	**2.6000e-004**		**6.8000e-003**	**6.8000e-003**		**6.2600e-003**	**6.2600e-003**						**23.2879**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.8000e-004	3.9000e-004	4.2400e-003	1.0000e-005	1.6000e-003	1.0000e-005	1.6100e-003	4.3000e-004	1.0000e-005	4.3000e-004						1.2756
Total	**5.8000e-004**	**3.9000e-004**	**4.2400e-003**	**1.0000e-005**	**1.6000e-003**	**1.0000e-005**	**1.6100e-003**	**4.3000e-004**	**1.0000e-005**	**4.3000e-004**						**1.2756**

3.5 SV12 Pave - 2022

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	6.4700e-003	0.1317	0.1996	2.6000e-004		7.2900e-003	7.2900e-003		7.2900e-003	7.2900e-003						23.2879
Paving	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Total	**6.4700e-003**	**0.1317**	**0.1996**	**2.6000e-004**		**7.2900e-003**	**7.2900e-003**		**7.2900e-003**	**7.2900e-003**						**23.2879**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.8000e-004	3.9000e-004	4.2400e-003	1.0000e-005	1.6000e-003	1.0000e-005	1.6100e-003	4.3000e-004	1.0000e-005	4.3000e-004						1.2756
Total	**5.8000e-004**	**3.9000e-004**	**4.2400e-003**	**1.0000e-005**	**1.6000e-003**	**1.0000e-005**	**1.6100e-003**	**4.3000e-004**	**1.0000e-005**	**4.3000e-004**						**1.2756**

3.6 SV12 Coat - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.0885					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	4.2700e-003	0.0371	0.0570	9.0000e-005		1.6100e-003	1.6100e-003		1.5900e-003	1.5900e-003						7.9005
Total	**4.0928**	**0.0371**	**0.0570**	**9.0000e-005**		**1.6100e-003**	**1.6100e-003**		**1.5900e-003**	**1.5900e-003**						**7.9005**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.2000e-004	4.1000e-004	4.5100e-003	2.0000e-005	1.7000e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004						1.3579
Total	**6.2000e-004**	**4.1000e-004**	**4.5100e-003**	**2.0000e-005**	**1.7000e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**						**1.3579**

3.6 SV12 Coat - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.0885					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	2.0000e-003	0.0458	0.0618	9.0000e-005		3.2100e-003	3.2100e-003		3.2100e-003	3.2100e-003						7.9005
Total	**4.0905**	**0.0458**	**0.0618**	**9.0000e-005**		**3.2100e-003**	**3.2100e-003**		**3.2100e-003**	**3.2100e-003**						**7.9005**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	6.2000e-004	4.1000e-004	4.5100e-003	2.0000e-005	1.7000e-003	1.0000e-005	1.7100e-003	4.5000e-004	1.0000e-005	4.6000e-004						1.3579
Total	**6.2000e-004**	**4.1000e-004**	**4.5100e-003**	**2.0000e-005**	**1.7000e-003**	**1.0000e-005**	**1.7100e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**						**1.3579**

3.7 SV18 Fine Grade - 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					
Fugitive Dust					0.1310	0.0000	0.1310	0.0713	0.0000	0.0713						0.0000
Off-Road	0.0776	0.7748	0.6097	1.5200e-003		0.0313	0.0313		0.0288	0.0288						134.2619
Total	**0.0776**	**0.7748**	**0.6097**	**1.5200e-003**	**0.1310**	**0.0313**	**0.1623**	**0.0713**	**0.0288**	**0.1001**						**134.2619**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.8000e-004	3.7000e-004	4.1600e-003	1.0000e-005	1.7100e-003	1.0000e-005	1.7200e-003	4.5000e-004	1.0000e-005	4.6000e-004						1.3093
Total	**5.8000e-004**	**3.7000e-004**	**4.1600e-003**	**1.0000e-005**	**1.7100e-003**	**1.0000e-005**	**1.7200e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**						**1.3093**

3.7 SV18 Fine Grade - 2023

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					0.0590	0.0000	0.0590	0.0321	0.0000	0.0321						0.0000
Off-Road	0.0592	0.8166	0.7594	1.5200e-003		0.0336	0.0336		0.0323	0.0323						134.2617
Total	**0.0592**	**0.8166**	**0.7594**	**1.5200e-003**	**0.0590**	**0.0336**	**0.0926**	**0.0321**	**0.0323**	**0.0644**						**134.2617**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.8000e-004	3.7000e-004	4.1600e-003	1.0000e-005	1.7100e-003	1.0000e-005	1.7200e-003	4.5000e-004	1.0000e-005	4.6000e-004						1.3093
Total	**5.8000e-004**	**3.7000e-004**	**4.1600e-003**	**1.0000e-005**	**1.7100e-003**	**1.0000e-005**	**1.7200e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**						**1.3093**

3.8 SV18 Build - 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	0.1426	1.2753	1.4556	2.5200e-003		0.0529	0.0529		0.0501	0.0501						214.9557
Total	**0.1426**	**1.2753**	**1.4556**	**2.5200e-003**		**0.0529**	**0.0529**		**0.0501**	**0.0501**						**214.9557**

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
Vendor	3.9300e-003	0.1088	0.0370	5.2000e-004	0.0147	1.8000e-004	0.0149	4.2500e-003	1.7000e-004	4.4200e-003						50.2681
Worker	0.0220	0.0141	0.1581	5.5000e-004	0.0648	3.9000e-004	0.0652	0.0172	3.6000e-004	0.0176						49.7825
Total	**0.0259**	**0.1229**	**0.1951**	**1.0700e-003**	**0.0796**	**5.7000e-004**	**0.0801**	**0.0215**	**5.3000e-004**	**0.0220**						**100.0506**

3.8 SV18 Build - 2023

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	0.0684	1.3725	1.6391	2.5200e-003		0.0841	0.0841		0.0841	0.0841						214.9554
Total	**0.0684**	**1.3725**	**1.6391**	**2.5200e-003**		**0.0841**	**0.0841**		**0.0841**	**0.0841**						**214.9554**

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
Vendor	3.9300e-003	0.1088	0.0370	5.2000e-004	0.0147	1.8000e-004	0.0149	4.2500e-003	1.7000e-004	4.4200e-003						50.2681
Worker	0.0220	0.0141	0.1581	5.5000e-004	0.0648	3.9000e-004	0.0652	0.0172	3.6000e-004	0.0176						49.7825
Total	**0.0259**	**0.1229**	**0.1951**	**1.0700e-003**	**0.0796**	**5.7000e-004**	**0.0801**	**0.0215**	**5.3000e-004**	**0.0220**						**100.0506**

3.8 SV18 Build - 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	0.2276	2.0451	2.4557	4.2800e-003		0.0797	0.0797		0.0754	0.0754						364.8611
Total	**0.2276**	**2.0451**	**2.4557**	**4.2800e-003**		**0.0797**	**0.0797**		**0.0754**	**0.0754**						**364.8611**

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
Vendor	6.5000e-003	0.1820	0.0610	8.8000e-004	0.0250	3.0000e-004	0.0253	7.2100e-003	2.9000e-004	7.5000e-003						84.8170
Worker	0.0352	0.0216	0.2489	9.0000e-004	0.1100	6.5000e-004	0.1107	0.0293	6.0000e-004	0.0299						81.1720
Total	**0.0417**	**0.2036**	**0.3099**	**1.7800e-003**	**0.1350**	**9.5000e-004**	**0.1360**	**0.0365**	**8.9000e-004**	**0.0374**						**165.9890**

3.8 SV18 Build - 2024

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	0.1161	2.3294	2.7820	4.2800e-003		0.1427	0.1427		0.1427	0.1427						364.8607
Total	**0.1161**	**2.3294**	**2.7820**	**4.2800e-003**		**0.1427**	**0.1427**		**0.1427**	**0.1427**						**364.8607**

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
Vendor	6.5000e-003	0.1820	0.0610	8.8000e-004	0.0250	3.0000e-004	0.0253	7.2100e-003	2.9000e-004	7.5000e-003						84.8170
Worker	0.0352	0.0216	0.2489	9.0000e-004	0.1100	6.5000e-004	0.1107	0.0293	6.0000e-004	0.0299						81.1720
Total	**0.0417**	**0.2036**	**0.3099**	**1.7800e-003**	**0.1350**	**9.5000e-004**	**0.1360**	**0.0365**	**8.9000e-004**	**0.0374**						**165.9890**

3.9 SV18 Pave - 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	0.0128	0.1240	0.1870	2.9000e-004		6.1700e-003	6.1700e-003		5.6800e-003	5.6800e-003						25.5413
Paving	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0128**	**0.1240**	**0.1870**	**2.9000e-004**		**6.1700e-003**	**6.1700e-003**		**5.6800e-003**	**5.6800e-003**						**25.5413**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.6000e-004	3.4000e-004	3.9600e-003	1.0000e-005	1.7500e-003	1.0000e-005	1.7600e-003	4.7000e-004	1.0000e-005	4.8000e-004						1.2929
Total	**5.6000e-004**	**3.4000e-004**	**3.9600e-003**	**1.0000e-005**	**1.7500e-003**	**1.0000e-005**	**1.7600e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**						**1.2929**

3.9 SV18 Pave - 2024

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	7.1000e-003	0.1444	0.2189	2.9000e-004		7.9900e-003	7.9900e-003		7.9900e-003	7.9900e-003						25.5413
Paving	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Total	**7.1000e-003**	**0.1444**	**0.2189**	**2.9000e-004**		**7.9900e-003**	**7.9900e-003**		**7.9900e-003**	**7.9900e-003**						**25.5413**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.6000e-004	3.4000e-004	3.9600e-003	1.0000e-005	1.7500e-003	1.0000e-005	1.7600e-003	4.7000e-004	1.0000e-005	4.8000e-004						1.2929
Total	**5.6000e-004**	**3.4000e-004**	**3.9600e-003**	**1.0000e-005**	**1.7500e-003**	**1.0000e-005**	**1.7600e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**						**1.2929**

3.10 SV18 Coat - 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					
Archit. Coating	4.0885					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	3.9600e-003	0.0341	0.0586	9.0000e-005		1.2700e-003	1.2700e-003		1.2500e-003	1.2500e-003						8.1390
Total	**4.0925**	**0.0341**	**0.0586**	**9.0000e-005**		**1.2700e-003**	**1.2700e-003**		**1.2500e-003**	**1.2500e-003**						**8.1390**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.6000e-004	3.4000e-004	3.9600e-003	1.0000e-005	1.7500e-003	1.0000e-005	1.7600e-003	4.7000e-004	1.0000e-005	4.8000e-004						1.2929
Total	**5.6000e-004**	**3.4000e-004**	**3.9600e-003**	**1.0000e-005**	**1.7500e-003**	**1.0000e-005**	**1.7600e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**						**1.2929**

3.10 SV18 Coat - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.0885					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	2.0600e-003	0.0471	0.0637	9.0000e-005		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003						8.1390
Total	**4.0906**	**0.0471**	**0.0637**	**9.0000e-005**		**3.3000e-003**	**3.3000e-003**		**3.3000e-003**	**3.3000e-003**						**8.1390**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.6000e-004	3.4000e-004	3.9600e-003	1.0000e-005	1.7500e-003	1.0000e-005	1.7600e-003	4.7000e-004	1.0000e-005	4.8000e-004						1.2929
Total	**5.6000e-004**	**3.4000e-004**	**3.9600e-003**	**1.0000e-005**	**1.7500e-003**	**1.0000e-005**	**1.7600e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**						**1.2929**

3.11 SV19 Fine Grade - 2026

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					0.1342	0.0000	0.1342	0.0730	0.0000	0.0730						0.0000
Off-Road	0.0717	0.6538	0.5972	1.5900e-003		0.0261	0.0261		0.0241	0.0241						140.4257
Total	**0.0717**	**0.6538**	**0.5972**	**1.5900e-003**	**0.1342**	**0.0261**	**0.1604**	**0.0730**	**0.0241**	**0.0971**						**140.4257**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.1000e-004	2.9000e-004	3.4900e-003	1.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004						1.2163
Total	**5.1000e-004**	**2.9000e-004**	**3.4900e-003**	**1.0000e-005**	**1.7800e-003**	**1.0000e-005**	**1.7900e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**						**1.2163**

3.11 SV19 Fine Grade - 2026

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					0.0604	0.0000	0.0604	0.0329	0.0000	0.0329						0.0000
Off-Road	0.0565	0.7642	0.7663	1.5900e-003		0.0316	0.0316		0.0306	0.0306						140.4255
Total	**0.0565**	**0.7642**	**0.7663**	**1.5900e-003**	**0.0604**	**0.0316**	**0.0920**	**0.0329**	**0.0306**	**0.0634**						**140.4255**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	5.1000e-004	2.9000e-004	3.4900e-003	1.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004						1.2163
Total	**5.1000e-004**	**2.9000e-004**	**3.4900e-003**	**1.0000e-005**	**1.7800e-003**	**1.0000e-005**	**1.7900e-003**	**4.7000e-004**	**1.0000e-005**	**4.8000e-004**						**1.2163**

3.12 SV19 Build - 2026

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	0.1255	1.1307	1.4386	2.5200e-003		0.0412	0.0412		0.0389	0.0389						215.0055
Total	**0.1255**	**1.1307**	**1.4386**	**2.5200e-003**		**0.0412**	**0.0412**		**0.0389**	**0.0389**						**215.0055**

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
Vendor	3.6600e-003	0.1038	0.0346	5.1000e-004	0.0147	1.7000e-004	0.0149	4.2500e-003	1.7000e-004	4.4200e-003						49.4182
Worker	0.0187	0.0106	0.1268	4.9000e-004	0.0648	3.7000e-004	0.0652	0.0172	3.4000e-004	0.0176						44.1907
Total	**0.0223**	**0.1144**	**0.1614**	**1.0000e-003**	**0.0796**	**5.4000e-004**	**0.0801**	**0.0215**	**5.1000e-004**	**0.0220**						**93.6089**

3.12 SV19 Build - 2026

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	0.0684	1.3725	1.6391	2.5200e-003		0.0841	0.0841		0.0841	0.0841						215.0052
Total	**0.0684**	**1.3725**	**1.6391**	**2.5200e-003**		**0.0841**	**0.0841**		**0.0841**	**0.0841**						**215.0052**

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
Vendor	3.6600e-003	0.1038	0.0346	5.1000e-004	0.0147	1.7000e-004	0.0149	4.2500e-003	1.7000e-004	4.4200e-003						49.4182
Worker	0.0187	0.0106	0.1268	4.9000e-004	0.0648	3.7000e-004	0.0652	0.0172	3.4000e-004	0.0176						44.1907
Total	**0.0223**	**0.1144**	**0.1614**	**1.0000e-003**	**0.0796**	**5.4000e-004**	**0.0801**	**0.0215**	**5.1000e-004**	**0.0220**						**93.6089**

3.12 SV19 Build - 2027

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	0.2119	1.9088	2.4284	4.2500e-003		0.0695	0.0695		0.0657	0.0657						362.9450
Total	**0.2119**	**1.9088**	**2.4284**	**4.2500e-003**		**0.0695**	**0.0695**		**0.0657**	**0.0657**						**362.9450**

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
Vendor	6.0700e-003	0.1722	0.0576	8.6000e-004	0.0248	2.9000e-004	0.0251	7.1700e-003	2.8000e-004	7.4500e-003						82.9897
Worker	0.0299	0.0164	0.2004	8.0000e-004	0.1095	5.9000e-004	0.1100	0.0291	5.4000e-004	0.0297						72.0509
Total	**0.0360**	**0.1886**	**0.2579**	**1.6600e-003**	**0.1343**	**8.8000e-004**	**0.1352**	**0.0363**	**8.2000e-004**	**0.0371**						**155.0406**

3.12 SV19 Build - 2027

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	0.1155	2.3168	2.7670	4.2500e-003		0.1419	0.1419		0.1419	0.1419						362.9446
Total	**0.1155**	**2.3168**	**2.7670**	**4.2500e-003**		**0.1419**	**0.1419**		**0.1419**	**0.1419**						**362.9446**

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
Vendor	6.0700e-003	0.1722	0.0576	8.6000e-004	0.0248	2.9000e-004	0.0251	7.1700e-003	2.8000e-004	7.4500e-003						82.9897
Worker	0.0299	0.0164	0.2004	8.0000e-004	0.1095	5.9000e-004	0.1100	0.0291	5.4000e-004	0.0297						72.0509
Total	**0.0360**	**0.1886**	**0.2579**	**1.6600e-003**	**0.1343**	**8.8000e-004**	**0.1352**	**0.0363**	**8.2000e-004**	**0.0371**						**155.0406**

3.13 SV19 Pave - 2027

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	0.0111	0.1050	0.1752	2.7000e-004		5.1700e-003	5.1700e-003		4.7500e-003	4.7500e-003						24.0302
Paving	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Total	**0.0111**	**0.1050**	**0.1752**	**2.7000e-004**		**5.1700e-003**	**5.1700e-003**		**4.7500e-003**	**4.7500e-003**						**24.0302**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	4.5000e-004	2.5000e-004	3.0200e-003	1.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004						1.0860
Total	**4.5000e-004**	**2.5000e-004**	**3.0200e-003**	**1.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**						**1.0860**

3.13 SV19 Pave - 2027

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	6.6800e-003	0.1359	0.2060	2.7000e-004		7.5200e-003	7.5200e-003		7.5200e-003	7.5200e-003						24.0302
Paving	0.0000					0.0000	0.0000		0.0000	0.0000						0.0000
Total	**6.6800e-003**	**0.1359**	**0.2060**	**2.7000e-004**		**7.5200e-003**	**7.5200e-003**		**7.5200e-003**	**7.5200e-003**						**24.0302**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	4.5000e-004	2.5000e-004	3.0200e-003	1.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004						1.0860
Total	**4.5000e-004**	**2.5000e-004**	**3.0200e-003**	**1.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**						**1.0860**

3.14 SV19 Coat - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.0885					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	3.7700e-003	0.0327	0.0586	9.0000e-005		1.1000e-003	1.1000e-003		1.0800e-003	1.0800e-003						8.1388
Total	**4.0923**	**0.0327**	**0.0586**	**9.0000e-005**		**1.1000e-003**	**1.1000e-003**		**1.0800e-003**	**1.0800e-003**						**8.1388**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	4.8000e-004	2.6000e-004	3.2100e-003	1.0000e-005	1.7500e-003	1.0000e-005	1.7600e-003	4.7000e-004	1.0000e-005	4.7000e-004						1.1539
Total	**4.8000e-004**	**2.6000e-004**	**3.2100e-003**	**1.0000e-005**	**1.7500e-003**	**1.0000e-005**	**1.7600e-003**	**4.7000e-004**	**1.0000e-005**	**4.7000e-004**						**1.1539**

3.14 SV19 Coat - 2027

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.0885					0.0000	0.0000		0.0000	0.0000						0.0000
Off-Road	2.0600e-003	0.0471	0.0637	9.0000e-005		3.3000e-003	3.3000e-003		3.3000e-003	3.3000e-003						8.1388
Total	**4.0906**	**0.0471**	**0.0637**	**9.0000e-005**		**3.3000e-003**	**3.3000e-003**		**3.3000e-003**	**3.3000e-003**						**8.1388**

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
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000						0.0000
Worker	4.8000e-004	2.6000e-004	3.2100e-003	1.0000e-005	1.7500e-003	1.0000e-005	1.7600e-003	4.7000e-004	1.0000e-005	4.7000e-004						1.1539
Total	**4.8000e-004**	**2.6000e-004**	**3.2100e-003**	**1.0000e-005**	**1.7500e-003**	**1.0000e-005**	**1.7600e-003**	**4.7000e-004**	**1.0000e-005**	**4.7000e-004**						**1.1539**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.8800e-003	0.0315	0.0964	3.8000e-004	0.0389	2.9000e-004	0.0392	0.0104	2.7000e-004	0.0107						34.6160
Unmitigated	7.8800e-003	0.0315	0.0964	3.8000e-004	0.0389	2.9000e-004	0.0392	0.0104	2.7000e-004	0.0107						34.6160

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Industrial Park	16.41	43.76	153.17	104,497	104,497
Total	16.41	43.76	153.17	104,497	104,497

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00	79	19	2

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Industrial Park	0.616749	0.035330	0.181430	0.103378	0.013121	0.005016	0.012828	0.021913	0.002183	0.001508	0.005219	0.000634	0.000691

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000						4,082.9206
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000						4,082.9206
NaturalGas Mitigated	0.0692	0.6292	0.5285	3.7800e-003		0.0478	0.0478		0.0478	0.0478						689.0156
NaturalGas Unmitigated	0.0692	0.6292	0.5285	3.7800e-003		0.0478	0.0478		0.0478	0.0478						689.0156

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Industrial Park	1.28354e+007	0.0692	0.6292	0.5285	3.7800e-003		0.0478	0.0478		0.0478	0.0478						689.0156
Total		**0.0692**	**0.6292**	**0.5285**	**3.7800e-003**		**0.0478**	**0.0478**		**0.0478**	**0.0478**						**689.0156**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Industrial Park	1.28354e+007	0.0692	0.6292	0.5285	3.7800e-003		0.0478	0.0478		0.0478	0.0478						689.0156
Total		**0.0692**	**0.6292**	**0.5285**	**3.7800e-003**		**0.0478**	**0.0478**		**0.0478**	**0.0478**						**689.0156**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Industrial Park	1.39801e+007				4,082.9206
Total					**4,082.9206**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Industrial Park	1.39801e+007				4,082.9206
Total					**4,082.9206**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.4715	5.0000e-005	5.0100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						0.0104
Unmitigated	3.4715	5.0000e-005	5.0100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						0.0104

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4089					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	3.0622					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	4.6000e-004	5.0000e-005	5.0100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						0.0104
Total	**3.4715**	**5.0000e-005**	**5.0100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**						**0.0104**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.4089					0.0000	0.0000		0.0000	0.0000						0.0000
Consumer Products	3.0622					0.0000	0.0000		0.0000	0.0000						0.0000
Landscaping	4.6000e-004	5.0000e-005	5.0100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005						0.0104
Total	**3.4715**	**5.0000e-005**	**5.0100e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**						**0.0104**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated				372.1092
Unmitigated				372.1092

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Industrial Park	126.505 / 0				372.1092
Total					**372.1092**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Industrial Park	126.505 / 0				372.1092
Total					**372.1092**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated				78.4526
Unmitigated				78.4526

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Industrial Park	156				78.4526
Total					**78.4526**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Industrial Park	156				78.4526
Total					**78.4526**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

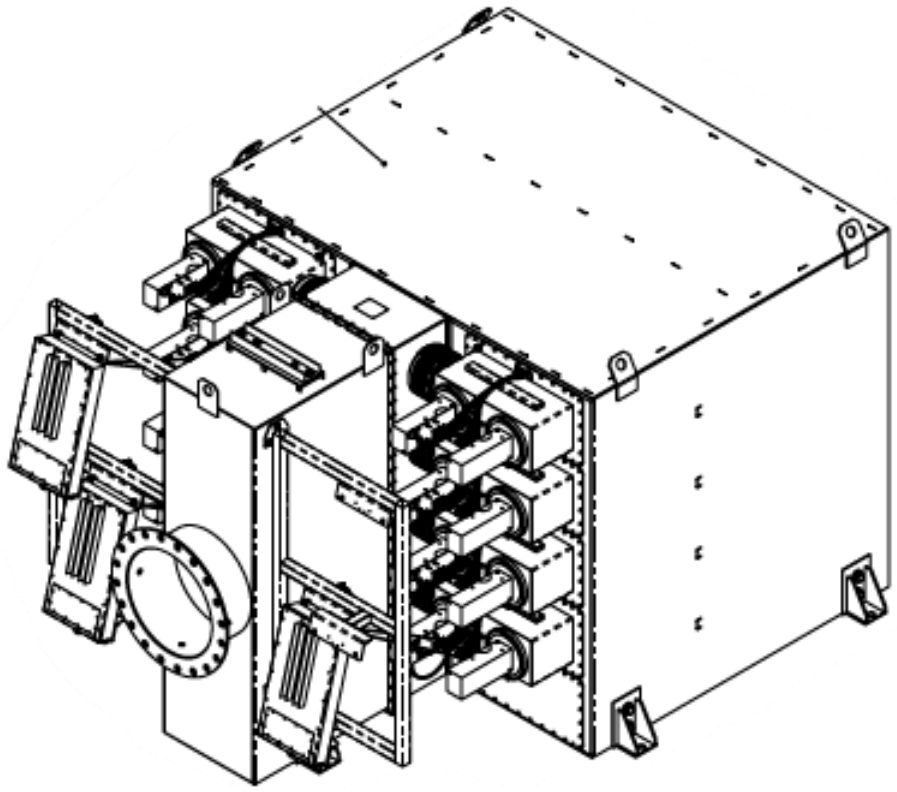
Equipment Type	Number

11.0 Vegetation

Attachment 2

DPF Technical Data

Active Diesel Particulate Filter



Active Diesel Particulate Filter

Intelligent microprocessor control

PM reduction up to 93%

Low back pressure

Rypos HDPF/C is a CARB Verified Level 3+ Diesel Particulate Filter characterized by high filter efficiency and very low backpressure. The system monitors and controls backpressure by energizing the sintered metal fiber filter cartridges, effectively oxidizing the collected Particulate Matter, PM10 and PM2.5. The system includes a Diesel Oxidation Catalyst (DOC) to reduce Carbon Monoxide and Hydrocarbons, minimizing diesel odor.

RYPOS, Inc.
150 Hopping Brook Road, Holliston, MA 01746
Phone: (508) 429-4552, Fax: (508) 429-4553
www.rypos.com

Active Diesel Particulate Filter

Particulate Filter Medium

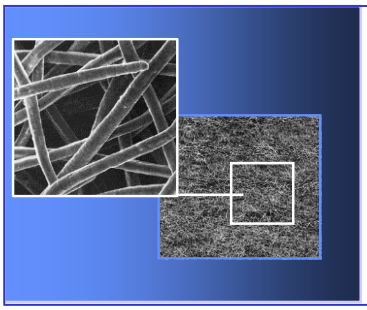
Sintered Metal Fiber

The filter medium is sintered metal fiber material with high soot holding capacity and is capable of capturing the very fine particles in the exhaust system. The proprietary filter material is designed specifically for removing PM10 and PM2.5 from the diesel exhaust.

Filter Cartridge

-Sintered metal fiber filter elements

-The non-woven matrix can tolerate thermal expansion and contraction



- o High porosity
- o Low back pressure
- o Withstands high temperatures
- o Low thermal mass
- o High filter efficiency

System Advantages

- CARB Level 3 Plus Verified (at least 85% reduction of PM)
- Reduces PM up to 93%
- Reduces CO up to 94%
- Reduces THC up to 77%
- Reduces NO_2 up to 96%

Electrical Control System

The operation of the RYPOS HDPF/C ADPF-9 is controlled by independent microprocessors. The controllers monitor the backpressure and sequentially energizes the filter cartridges, creating a resistive heating element. Power is taken directly from the genset, to provide the required electrical current to heat the filter element to the temperature required to oxidize the captured Particulate Matter (PM10 and PM2.5). During this regeneration cycle, the exhaust flow is restricted through the energized filter elements being regenerated, to minimize the cooling effect of the engine exhaust. This regeneration is performed automatically while the generator is running, without any operator interaction, and is completed independent of engine exhaust temperature.

System Specification

Approximate Weight:	10,100 pounds
Approximate Dimensions:	Length 137”, Width 98”, Height 87”
Input Pipe Diameter	ANSI flanges sized to match application requirement
Output Pipe Diameter	ANSI flanges sized to match application requirement
Power Requirements	480VAC 3-phase
Power Consumption	38 kVA Peak, 19 kVA Average
Housing Material	Carbon Steel

RYPOS, Inc.
150 Hopping Brook Road, Holliston, MA 01746
Phone: (508) 429-4552, Fax: (508) 429-4553
www.rypos.com

Cummins: Equinix SV-11, San Jose CA

July 23, 2020

APPLICATION DESCRIPTION:

Engine Model: Cummins C3250 D6e, QSK95-G9
Quantity: 3
HP: 3250 kW
RPM: 1,800 RPM
Genset Voltage: 480V
Electrical: 480v 3 Phase
Design Exhaust Flow Rate: 23,910 CFM
Max temperature: 872 F
Engine Duty: Stand-by/Emergency
Lube Oil Specification: .5% wt% sulfated ash or less
Lube Oil Consumption: Per Cummins specifications
Turbo Charged & After-cooled
Engine Family # LCEXL95.0AAA

RYPOS PRODUCT SPECIFICATION:

MODEL #: HDPF/C ADPF-9, PART # TBD
System Data: Active filter with integrated Diesel Oxidation Catalyst
Housing Construction: Carbon Steel with Hi Temp Zinc Based Primer
Filter Connections: TBD, to best suit installation requirement
Status Display Harness: 25' Length
Acoustical Spec: Critical Grade attenuation, calculates at 68 db(A) at 23'
System Power Requirements: 480v 3-Phase; 38 KW max load, 19 KW average
Verification: CARB Level 3+

Emissions Summary for a Degreened Rypos Filter and Rated Engine Load

Exhaust Gases	Engine Output	Reduction	System Output	Area Limits
CO	**0.50 gm/bhp-hr**	**85%+**	**0.075 gm/bhp-hr**	**TBD**
PM10	**0.11 gm/bhp-hr**	**85%+**	**meets 0.01 gm/bhp-hr PM emission standard***	**CARB Level 3 +**
NO_X + NMHC	**4.6 gm/bhp-hr**	**N/A**	**4.6 gm/bhp-hr**	**TBD**

***complies with the 0.01 g/bhp-hr PM emission standard of 17 CCR §§ 93115.6 – .9 and SCAQMD Rules 1470(c)(2) – (c)(8)**

40 Kenwood Circle Franklin, MA 02038
Tel. #508-429-4552 Fax #508-429-4553
www.rypos.com

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER DE-07-001-07

Pursuant to the authority vested in the Air Resources Board by Health and Safety Code, Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code sections 39515 and 39616 and Executive Order G-14-012;

Relating to Verification under sections 2700 through 2711 of Title 13 of the California Code of Regulations

Rypos, Inc.
Hybrid Diesel Particulate Filter (HDPF/C)

The California Air Resources Board (CARB) staff has reviewed Rypos' request for verification of their hybrid active diesel particulate filter and diesel oxidation catalyst system (Rypos HDPF/C). Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, the Executive Officer of CARB hereby finds that the Rypos HDPF/C reduces emissions of diesel particulate matter (PM) consistent with a Level 3 device (greater than or equal to 85 percent reduction) (Title 13 California Code of Regulations [CCR] sections 2702 [f] and [g] and section 2708) and complies with the CARB January 1, 2009, nitrogen dioxide (NO_2) limit (Title 13 California Code of Regulations [CCR] Appendix A section 2702 [f] and section 2706 [a]). Accordingly, the Executive Officer determines that the Rypos HDPF/C merits verification as a Level 3 Plus system for diesel engines on stationary emergency standby generators and emergency standby pumps, subject to the terms and conditions specified below.

This verification is subject to the following terms and conditions:

- The engine must be used in a stationary application associated with emergency standby generators or emergency standby pumps.
- The engine is greater than 50 hp and model year 1996 or newer, certified to nonroad diesel engine emission standards Tier 1, Tier 2, Tier 3, Tier 4i with a rated horse power between 50 and 75 or over 750, or Tier 4 Alt 20% NOx and PM, and having the engine family names listed in Attachment.
- The engine must be a certified off-road engine with particulate matter (PM) emission levels less than or equal to 0.2 g/bhp-hr (as tested on an appropriate steady-state certification cycle outlined in the CARB off-road regulations – similar to ISO 8178 D2).
- The engine must be in its original certified configuration.
- The engine must not employ exhaust gas recirculation.
- The engine must not have a pre-existing oxidation catalyst.
- The engine must not have a pre-existing diesel particulate filter.
- The engine can be a two or four-stroke.
- The engine can be turbocharged or naturally-aspirated.
- The engine must be certified for use in California.

- Rypos must review actual operating conditions (duty cycle, baseline emissions, exhaust temperature profiles, and engine backpressure) prior to retrofitting an engine with the HDPF/C to ensure compatibility.
- The engine should be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- The other terms and conditions specified in Table 1 below.

Table 1: Summary of Conditions for the Rypos HDPF/C System

Parameter	Value
PM Verification Level	Level 3 Plus: • PM - at least 85% reduction. • NO_2 - meets January 2009 limit.
Regeneration System	Active
Applications	Stationary Emergency Standby Generators or Pumps.
Engine Type	Diesel-fueled, with or without turbocharger, certified off-road engine with particulate matter (PM) emission levels less than or equal to 0.2 g/bhp-hr.
Engine Models	1996 or newer and listed in Attachment 1 to the Executive Order.
Engine Horsepower	Greater than 50 hp.
Fuel	California diesel fuel with less than or equal to 15 ppm sulfur or a biodiesel blend provided that the biodiesel portion of the blend complies with ASTM D6751, the diesel portion of the blend complies with Title 13 (CCR), sections 2281 and 2282, and the blend contains no more than 20 percent biodiesel by volume.
Minimum Exhaust Temperature for Filter Regeneration	Not Applicable (NA). Active DPF.
Maximum consecutive minutes at idle	NA. Active DPF.
Number of Cold Start and 30 Minute Idle Sessions before Regeneration Required	NA. Active DPF.
Number of Hours of Operation Before Cleaning of Filter Required	Inspect every 1000 hours and clean if needed. Active DPF.

The Rypos HDPF/C consists of a filter housing, electrical control circuit, and filter cartridges made of sintered metal fibers, referred to as an active sintered metal diesel particulate filter, and a downstream diesel oxidation catalyst.

This Executive Order is valid provided that installation instructions for Rypos HDPF/C do not recommend tuning the engine to specifications different from those specified by the engine manufacturer.

No changes are permitted to the device unless approved by CARB. CARB must be notified in writing of any changes to any part of the Rypos HDPF/C and these changes must be evaluated and approved by CARB. Failure to report any changes shall invalidate this Executive Order.

Changes made to the design or operating conditions of Rypos HDPF/C which adversely affect the performance of the engine's pollution control system shall invalidate this Executive Order.

No person shall alter, physically disable, disconnect, bypass, or tamper with an installed CARB verified diesel emission control strategy, as outlined in Title 13 CCR section 2711(e). Should CARB become aware that a design feature of a verified device is altered, physically disabled, disconnected, bypassed, or tampered on multiple units by independent persons, Rypos will be responsible to propose a design modification and recall plan to the Executive Officer to minimize existing and potential for future tampering of the verified device.

Marketing of the Rypos HDPF/C using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior approval is obtained from CARB.

As specified in the Diesel Emission Control Strategy Verification Procedure (Title 13 CCR section 2706 [g]), CARB assigns each Diesel Emission Control Strategy a family name. The designated family name for the verification as outlined above is:

CA/RYP/2007/PM3+/N00/ST/DPF01

Additionally, as stated in the Diesel Emission Control Strategy Verification Procedure, Rypos, Inc., is responsible for honoring their warranty (section 2707) and conducting in-use compliance testing (section 2709).

In addition, Rypos, Inc. must conduct in-use compliance testing (section 2709), which involves the following: in-use compliance field testing after 100 units have been sold or leased in California and in-use compliance emissions testing after 300 units have been sold or leased in California (section 2709 (a)). Both the in-use compliance field and emissions testing proposals have to be submitted within 90 days after selling or leasing in California the 100th unit and 300th unit, respectively (section 2709 (d)). The in-use compliance field and emission testing reports must be submitted no later than 18 months after selling or leasing the 100th and 300th units in the California market, respectively, as outlined in section 2709 (k).

In addition to the foregoing, CARB reserves the right in the future to review this Executive Order and the verification provided herein to assure that the verified system continues to meet the standards and procedures of California Code of Regulations, Title 13, section 2222, et seq and California Code of Regulations, Title 13, sections 2700 through 2711.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

Executive Order DE-07-001-06 is hereby superseded and is of no further force and effect.

Executed at Sacramento, California, this 9th day of August 2019.

Richard W. Corey
Executive Officer
by

Cynthia Marvin, Chief
Transportation and Toxics Division

Attachment: CARB Approved Model Year 1996 to 2019 Engine Families for the Rypos HDPF/C.