Air Quality, GHG, HRA, AQIA, and LST Study for a Renewable Natural Gas Facility in Irvine, CA

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July 2025

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List of Acronyms and Abbreviations

AB	Assembly Bill
ADMRT	Air Dispersion Modeling and Risk Tool
AERMOD	AMS/EPA Regulatory Model
AMS	American Meteorological Society
AQIA	Air Quality Impact Analysis
AQMP	Air Quality Management Plan
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practice
BPIPPRM	Building Profile Input Program for Prime
CAAP	Climate Action and Adaptation Plan
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
DPM	Diesel Particulate Matter
FRB	Frank R. Bowerman
GHG	Greenhouse Gas
GLC	Ground-Level Concentration
HAP	Hazardous Air Pollutant
HARP2	Hotspots Analysis and Reporting Program, Version 2
HFC	Hydrofluorocarbon
HIA	Acute Hazard Index
HIC	Chronic Hazard Index
HRA	Health Risk Assessment
HVAC	Heating, Ventilation, and Air Conditioning
ICE	Internal Combustion Engine
LFG	Landfill Gas
LST	Localized Significance Threshold
LTS	Less Than Significant
MEIR	Maximally Exposed Individual Resident
MEIW	Maximally Exposed Individual Worker
mph	Mile Per Hour
MPO	Metropolitan Planning Organization
MT	Metric Ton

N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NED	National Elevation Dataset
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
OCWR	Orange County Waste & Recycling
OEHHA	Office of Environmental Health Hazard Assessment
PFD	Process Flow Diagram
POR	Point of Receipt
PM_{10}	Particulate Matter Less Than 10 Microns in Size
$PM_{2.5}$	Particulate Matter Less Than 2.5 Microns in Size
ppb	Parts per Billion
ppm	Parts per Million
REL	Reference Exposure Level
RELOOC	Regional Landfill Options for Orange County
RMP	Risk Management Policy
RNG	Renewable Natural Gas
ROG	Reactive Organic Gases
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
scfm	Standard Cubic Feet per Minute
SCS	Sustainable Communities Strategy
SJVAPCD	San Joaquin Valley Air Pollution Control District
SoCalGas	Southern California Gas Company
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
SRA	Source-Receptor Area
TAC	Toxic Air Contaminant
U.S. EPA	United States Environmental Protection Agency
UTM	Universal Transverse Mercator
$\mu g/m^3$	Micrograms per Cubic Meter
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound

Air Quality, GHG, HRA, AQIA, and LST Study for a Renewable Natural Gas Facility in Irvine, CA

1.0 INTRODUCTION

This technical report includes air quality, greenhouse gas (GHG), health risk assessment (HRA), air quality impact analysis (AQIA), and localized significance threshold (LST) analyses for the construction and operation of a new renewable natural gas (RNG) facility that will be located at an existing landfill in Irvine, CA, which is within the jurisdiction of the County of Orange (the County) and the South Coast Air Quality Management District (SCAQMD).

1.1 Project Description

The Frank R. Bowerman (FRB) Landfill is a state-of-the-art, Class III, municipal solid waste facility owned by the County of Orange and operated and maintained by Orange County Waste & Recycling (OCWR). The FRB Landfill opened in 1990 and is the ninth largest landfill in the United States. The property spans approximately 725 acres of hillside with 534 acres allocated for waste disposal. It is permitted for 11,500 tons per day maximum with an annual average of 8,500 tons per day. The FRB Landfill is currently receiving approximately 8,000 tons of refuse per day. The FRB Landfill has enough projected capacity to serve residents and businesses until approximately 2053. The current permitted capacity is 266 million cubic yards, of which approximately 105.7 million cubic yards have been placed as of June 2022.

The Regional Landfill Options for Orange County (RELOOC) defines the permitted vertical and horizontal expansions for the Master Development Plan of the FRB Landfill (County of Orange 2006). The permitted vertical and horizontal expansions are implemented in phases to provide for sufficient landfill operation areas and not disturb all parts of the landfill at once. The Master Development Plan includes three Phase VIII subareas (VIII A, B, and C). The FRB Master Development Plan also includes several on-site stockpile locations for soil excavated as part of landfill phase development and operations. All soil stockpiles are within the landfill property. The soil is used for daily and intermediate cover, liner, road construction, and other related uses. Excavations are currently underway for the development of Phase VIIIA1. Soils excavated from the development of Phase VIIIA1 are stockpiled in the soil stockpile area.

The landfill gas (LFG) currently natively created is managed via a gas collection and control system, which includes vertical and horizontal gas extraction wells, a collection pipe system, and a flare station complex comprised of six flares. The Bowerman Power Plant, an existing 19.6-megawatt LFG-to-energy facility, was opened in 2016 and is an award-winning, public-private partnership producing enough electricity for the City of Anaheim to power 26,000 homes. Bowerman Power currently owns and operates the Bowerman Power Plant. It is located adjacent to the flare station and processes approximately 8,350 standard cubic feet per minute (scfm) of raw LFG to remove moisture and contaminants. The LFG not processed by the Bowerman Power Plant is incinerated at the flare station. California law specifically encourages the production and use of RNG. SB 1440 directs the California Public Utilities Commission to evaluate establishing goals or targets for RNG purchases by California gas utilities. The California Air Resource Board's

2022 Scoping Plan for Achieving Carbon Neutrality emphasizes the importance of relying on RNG to reduce emissions for hard-to-electrify end uses.

Bowerman Power is working with OCWR to develop an RNG Plant at the FRB Landfill. The RNG Plant will be designed to process a portion of the excess LFG that has not been processed at the Bowerman Power Plant and would otherwise require incineration at the existing adjacent flare station and then deliver the processed RNG to Southern California Gas Company (SoCalGas) via a pipeline. The Project does not include the storage of RNG. The RNG Plant layout will be comprised of two areas: the process equipment area and the control and electrical buildings.

The RNG Plant will be designed to process a maximum of 6,000 scfm of raw LFG at the inlet. The process will remove moisture, nitrogen, oxygen, carbon dioxide, hydrogen sulfide, volatile organic chemicals, hydrogen sulfide, and other minor impurities to meet the gas specifications of SoCalGas. The RNG plant was sized based on the available capacity of the existing SoCalGas pipeline system, as provided by SoCalGas. A simplified PFD of the process is shown in Figure 1-2 and details on the breakdown and flow of each component of the raw LFG are shown in Appendix B.

Excavation is currently underway for the development of FRB Landfill Phase VIIIA1. The soils removed during the excavation are stockpiled within the FRB Landfill's boundaries. The RNG Plant pad is expected to require approximately 93,190 cubic yards of fill material. This fill material will be extracted from within the soil stockpile area and trucked to the RNG Plant site for development of the RNG Plant foundation pad.

SoCalGas will develop a point of receipt (POR) station that will receive RNG from the plant, odorize it, compress it, and insert the RNG into its pipeline. A 250-gallon odorant tank will be installed in the POR station. SoCalGas will construct a new 12-inch diameter pipeline to convey the RNG from the POR on the Project site to the existing SoCalGas pipeline at the corner of Portola Parkway and Jeffrey Road, in the City of Irvine. The new SoCal Gas pipeline will be approximately 2.0 miles in length along Bee Canyon Access Road and approximately 0.4 miles in length along Portola Parkway, for a total of 2.4 miles.

The proposed RNG systems are intended to support continuous operation with appropriate equipment and components. To support minimal staffing, the RNG Plant will be automated to allow station operations. Under normal conditions, maintenance personnel will be on-site for site inspections and maintenance only as needed, and typically only during daylight hours.

The RNG Plant will be supplied with LFG from the existing flare station for processing into pipeline quality gas (i.e., Product Gas). The RNG Plant will be designed to produce RNG that meets the Product Gas Composition requirements as set forth pursuant to SoCalGas's Rule Number 30 requirements.

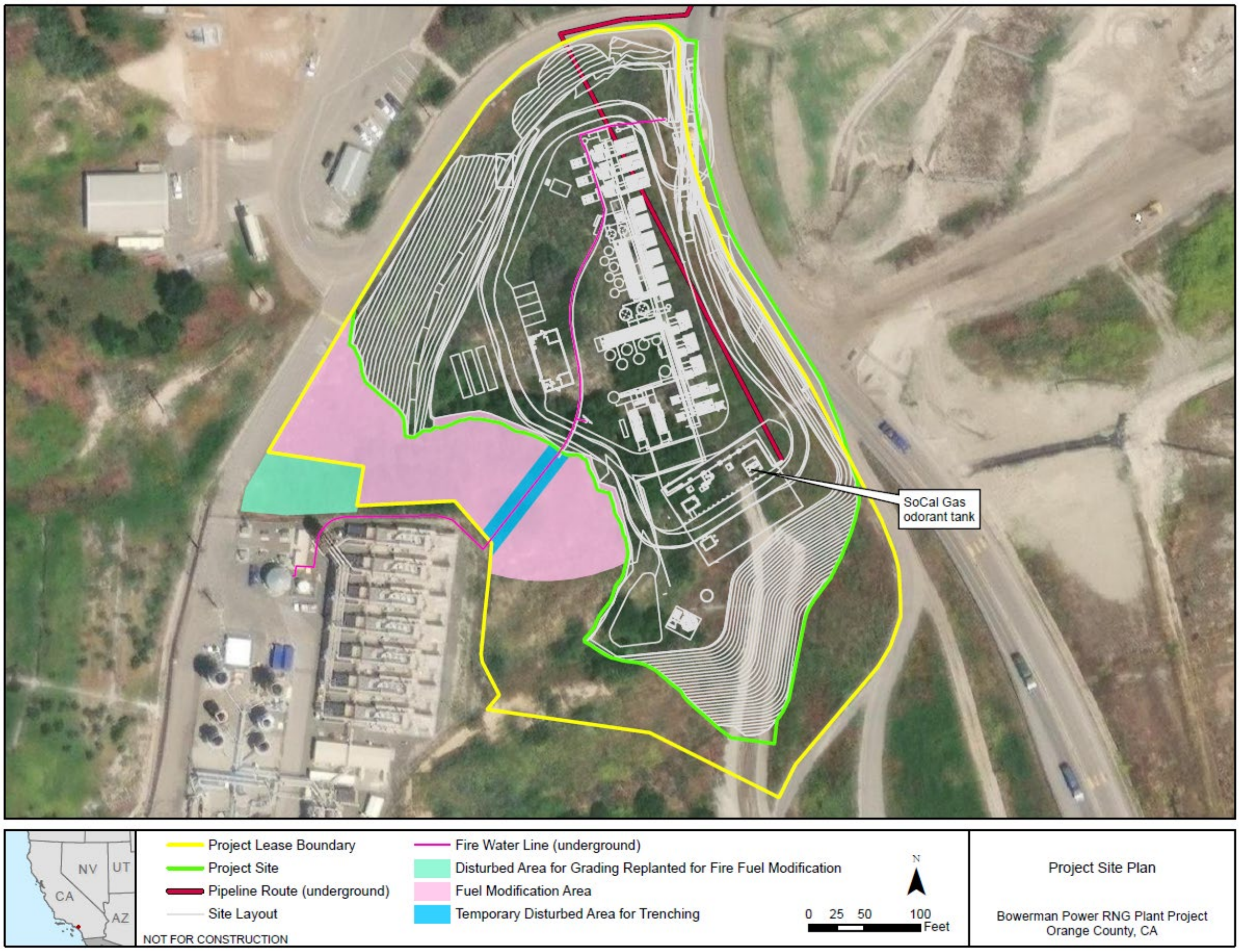
The RNG Plant will have two buildings: an electrical building, which is planned to be unoccupied, and a Control Building, which will be occupied by the operational staff. The process equipment will be placed outside on the RNG Plant pad. The Control Building will house the Control Center (computer stations) and lavatories, and the Electric Building will house the electrical room.

The SoCalGas POR station located on the RNG Plant site will be 8,000 square feet and include an electrical shelter, analyzer shelter, automated control valve(s), filter separator, meter, odorant skid, aboveground piping and pipe supports, bollards, fencing, roadways, and gates. The POR's equipment and their function are briefly described below:

- Electrical Shelter: The electrical shelter provides power to the POR's electrical equipment, gas instrumentation, and communication controls.
- Analyzer Shelter (or Gas Analyzer System): The analyzer shelter samples and analyzes incoming RNG, from the RNG Plant, to evaluate gas composition and quality. If inlet gas qualities deviate from the allowable limits, the analyzer shelter will trigger the overpressure protection valve to close and rejected gas will be routed back to the RNG Plant for re-processing or flaring. Once permissible gas composition and quality are confirmed by the analyzer shelter, the overpressure production valve will open, and gas will be allowed into the POR station.
- Automated Control Valve(s): The control valves regulate the gas pressure of the RNG that is injected into SoCalGas' existing natural gas infrastructure.
- Filter Separator: The filter separator separates incoming particulates, entrained liquids, and RNG entering the POR station and allows for dry gas to flow into the flow meter.
- Metering (or Flow Metering): The flow meter calculates the corrected gas flow of the RNG entering the POR station.
- Odorant Skid (or Odorizing System): The odorizing system injects odorant *(mercaptan)* into the RNG stream prior to injection into SoCalGas' existing natural gas infrastructure. Odorant is injected as a safety provision to make a gas leak readily detectable by sense of smell. The odorant skid contains a 250-gallon odorant storage tank, two expansion tanks, two injection pumps, two verometers, and four odorant filters.
- Above-Ground Piping and Pipe Supports: The above-ground piping and pipe supports transport the RNG through the POR station and allow for SoCalGas personnel to perform future maintenance on the pipelines.
- Bollards, Fencing, Roadways, and Gates: The bollards, fencing, roadways, and gates protect the POR station from vehicle collision and unauthorized access.

Normal operational power will be provided by Southern California Edison (SCE) service. In case of SCE power outage, a natural gas emergency generator will be on-site to power critical facility safety and control systems. The generator will be used for temporary backup power only. An aerial schematic of the RNG project site is shown in Figure 1-1 below.

Figure 1-1: RNG Project Site Schematic



1.2 Process Description

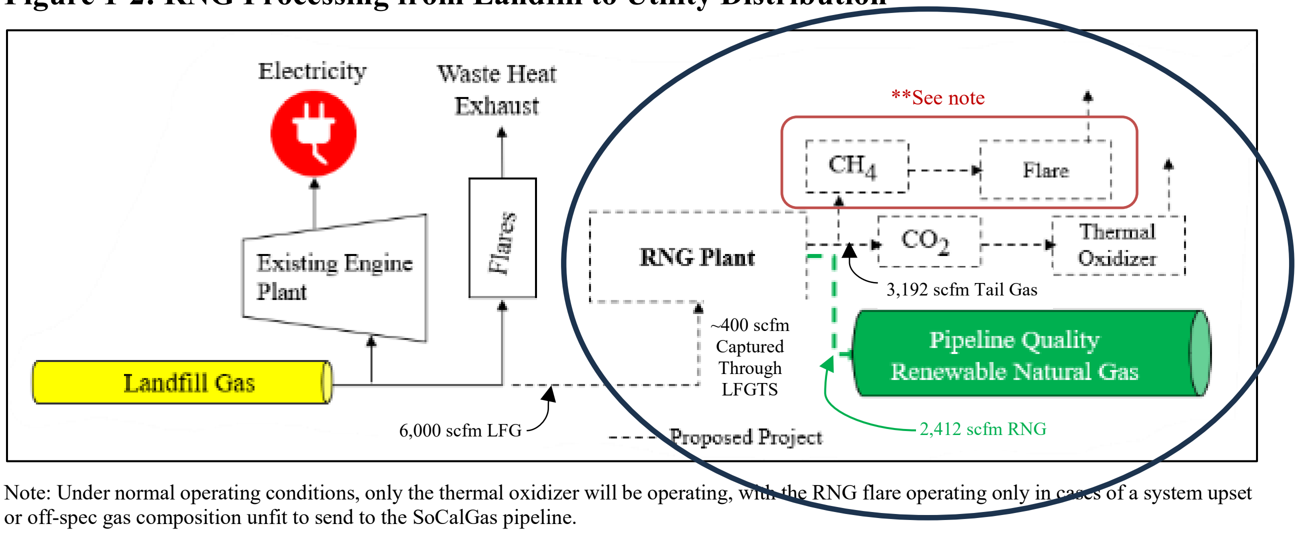
The RNG Plant will consist of four main processes:

- A Landfill Gas Treatment System (LFGTS) comprised of subsystems to compress the influent LFG; remove particles, water, Volatile Organic Compounds (VOC), siloxanes, Hydrogen Sulfide (H_2S), Carbon Dioxide (CO_2), Oxygen (O_2), and Nitrogen (N_2); and process the resulting gas by dehydration and compression; all to meet SoCalGas sales gas specifications. The LFGTS does not have its own direct emissions to atmosphere.
- A 32.9 Million British Thermal Units (MMBTU)/hr (at High Heating Value or HHV) Low-Nitrogen Oxides (NOx) thermal oxidizer, also referred to herein as a Thermal Oxidizer Unit (TOU), to continuously destroy streams of low-BTU tail gases that are produced from LFGTS; with up to 280 scfm natural gas as supplemental fuel.
- A 120.0 MMBTU/hr flare to destroy off-specification (off-spec) product and process gases, as well as gases vented during initial and periodic start-up operations and plant depressurization associated with shutdown operations; with a 0.10 MMBTU/hr pilot, fueled by natural gas, and operating continuously to allow for intermittent lower and higher heating value streams to be routed to the flare for disposal.

- A Caterpillar DG 150 generator set, driven by a 253 horsepower (hp) natural gas-fueled emergency Internal Combustion Engine (ICE), to provide backup power when grid power is unavailable.

Figure 1-2 presents a simplified Process Flow Diagram (PFD) for the RNG facility. A detailed version of the PFD is shown in Appendix B, page 8. Permit applications for the aforementioned equipment were submitted to the SCAQMD on May 21, 2024.

Figure 1-2: RNG Processing from Landfill to Utility Distribution



Note: Under normal operating conditions, only the thermal oxidizer will be operating, with the RNG flare operating only in cases of a system upset or off-spec gas composition unfit to send to the SoCalGas pipeline.

1.3 Facility Location

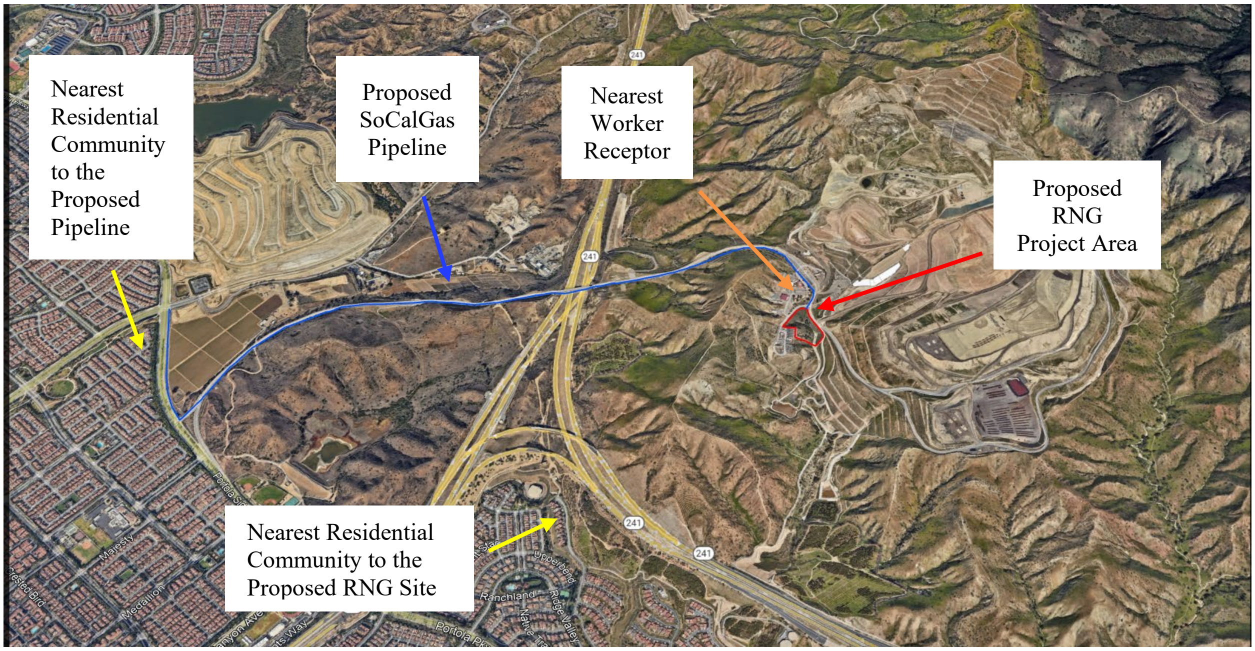
The proposed site is located at 11006 Bee Canyon Access Road in Irvine, CA, which is within the jurisdiction of the County of Orange (the County). The facility is located in the unincorporated General Agricultural, Citrus Rural District (A1) zone. The nearest residential receptors are homes located in the City of Irvine, Portola Springs neighborhood, generally south of the Project site, on the south side of State Route (SR) 241 and east of SR 133. The nearest worker receptor is located at Jimni Systems Inc., located west of State Route 133.

The new SoCalGas pipeline will run from the point of interconnect within RNG Project Area, down Bee Canyon Access Road to the existing SoCalGas pipeline on the corner of Portola Parkway and Jeffery Road. The new SoCal Gas pipeline will be approximately 2.0 miles in length along Bee Canyon Access Road and approximately 0.4 miles in length along Portola Parkway, for a total of 2.4 miles.

Figure 1-3 is satellite imagery showing the location of the proposed facility, SoCalGas pipeline, the surrounding area, highways, and the nearest receptors.

The Project will be located in unincorporated Orange County within the sphere of influence of the City of Irvine, except for a small portion of the new SoCal Gas pipeline, which will be located within the City of Irvine.

Figure 1-3: Proposed SoCalGas Location Diagram



2.0 ASSUMPTIONS

The following sources of information were used in developing the emissions estimates for the proposed Project using the California Emissions Estimator Model® (CalEEMod). CalEEMod default settings that have a particularly important impact on the Project are listed below.

- The Applicant defined:
  - Basic Project design features, including size of building features, parking spaces, number of units, landscaping, etc.;
  - Low VOC paints will be used in compliance with SCAQMD rules;
  - During construction, any exposed soil and unpaved access roads will be watered a minimum of three times a day, as required by the SCAQMD;
  - Paved roads outside access points to the parcel will be swept daily during the construction, site preparation, and grading phases to control track-out;
  - All construction equipment greater than 350 horsepower (HP) for the Trenching and Pipeline Construction phase (i.e., Phase 6) were assumed to use Tier 4 engines; and
  - The Control Building will meet the 2022 Title 24 Building Envelope Energy Efficiency Standards.
- CalEEMod defaults were used for:
  - Construction equipment load factors;
  - Fleet average age for the proposed RNG project;
  - Architectural coating areas; and

- Average vehicle trip distances.
- Mitigation Measures:
  - Construction equipment greater than 350 HP for the Trenching and Pipeline Construction phase (i.e., Phase 6) will be equipped with Tier 4 Final engines.

3.0 AIR QUALITY AND GREENHOUSE GAS IMPACTS ANALYSES

In order to evaluate the potential for air quality and GHG impacts from a proposed project, quantitative significance criteria established by the local air quality agency, such as the SCAQMD, may be relied upon to make significance determinations based on mass emissions of criteria pollutants and GHGs, as presented in this report. As shown below, approval of the Project would not result in any significant effects relating to air quality or GHGs.

3.1 CEQA Thresholds of Significance

3.1.1 Criteria Pollutants, Toxic Air Contaminants, and Odors

The Air Quality section of Appendix G of the CEQA Guidelines (Environmental Checklist Form) contains four air quality significance criteria. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

c) Expose sensitive receptors to substantial pollutant concentrations?

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The SCAQMD air quality significance thresholds for construction and operation to evaluate local and regional impacts are presented in Table 3-1.

3.1.2 Greenhouse Gases

The Greenhouse Gas Emissions section of Appendix G of the CEQA Guidelines contains two GHG significance criteria. Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The SCAQMD CEQA threshold of significance for GHGs for industrial facilities is 10,000 MT per year CO_2e (Table 3-1). This threshold accounts for operational emissions as well as emissions generated during construction amortized over a 30-year projected project lifetime.

Table 3-1: SCAQMD CEQA Thresholds of Significance

Pollutant	Project Construction (lbs/day)	Project Operation (lbs/day)
ROG (VOC)	75	55
NO_x	100	55
CO	550	550
SO_x	150	150
PM_{10}	150	150
$PM_{2.5}$	55	55
$PM_{2.5}$ 24-hour Average	10.4 µg/m^3	2.5 µg/m^3
PM_{10} 24-hour Average	10.4 µg/m^3	2.5 µg/m^3
PM_{10} Annual Average	1.0 µg/m^3	
NO_2 1-hour Average	0.18 ppm (state)	
NO_2 Annual Arithmetic Mean	0.03 ppm (state) & 0.0534 ppm (federal)	
SO_2 1-hour Average	0.25 ppm (state) and 0.075 ppm (federal – 99^{th} percentile)	
SO_2 24-hour Average	0.04 ppm (state)	
Sulfate 24-hour Average	25 µg/m^3 (state)	
CO 1-hour Average	20 ppm (state) and 35 ppm (federal)	
CO 8-hour Average	9.0 ppm (state/federal)	
Toxic Air Contaminants (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥10 in one million	
	Cancer Burden >0.5 excess cancer cases (in areas ≥1 in one million)	
	Chronic and Acute Hazard Index ≥1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to Rule 402	
GHGs	10,000 MT/yr CO_2e for industrial facilities	
	3,000 MT/yr CO_2e for land use projects (draft proposal)	

Source: SCAQMD 2023, 2008b.

3.2 Project Emissions Estimation

The land use construction and operation analyses were performed using CalEEMod version 2022.1.1.29, the official statewide land use computer model designed to provide a uniform platform for estimating potential criteria pollutant and GHG emissions associated with both construction and operations of land use projects under the California Environmental Quality Act (CEQA). The model quantifies direct emissions from construction and operations (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. The mobile source emission factors used in the model – published by the California Air Resources Board (CARB) – include the Pavley standards and Low Carbon Fuel standards. The model also identifies Project design features, regulatory measures, and control measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from the selected measures. CalEEMod was developed by the California Air Pollution Control Officers Association (CAPCOA) in collaboration with the SCAQMD, the Bay Area Air Quality Management District (BAAQMD), the San Joaquin Valley Air Pollution Control District (SJVAPCD), and other California air districts. Default land use data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) were provided by the various California air districts to account for local requirements and conditions. As the official assessment methodology for land use projects in California, CalEEMod is relied upon herein for construction and land use operational (i.e., mobile, energy and water use, etc.) emissions quantification, which forms the basis for the impact analysis.

The stationary equipment that would contribute to the emissions of criteria pollutants, TACs, and GHGs during the operational phase are described in Section 1.2 and include:

- The thermal oxidizer;
- The off-spec flare pilot (the rationale for excluding gas disposed in the flare is described in Section 3.2.2);
- The generator set ICE;
- Fugitive emissions; and
- GHGs associated with product gas combustion.

Emissions from combustion for each of these sources along with fugitive emissions were calculated separately and entered into CalEEMod under the “User Defined” category. These emissions are summarized in Sections 3.5 and 4.3, Tables 3-10, and 4-7 to 4-10. Detailed emission calculations are included Appendix D.

3.2.1 Construction

Based on information received from the Applicant, representative land use data for the proposed Project activities that were used for CalEEMod input are presented in Table 3-2. The Project is expected to require up to approximately 1.5 years of planned work activities (i.e., from mobilization to substantial completion) comprising six construction phases:

1. Site preparation;
2. Grading;
3. Building construction;
4. Paving;
5. Architectural coating; and
6. Trenching and pipeline construction.

A preliminary construction schedule is shown in Table 3-3. The proposed list of offroad equipment for each construction phase is shown in Table 3-4. CalEEMod defaults were used for the nonroad construction equipment load factor and HP. A mitigation measure was included to use only construction equipment greater than 350 HP that meet the U.S. Environmental Protection Agency (EPA) Tier 4 emissions standards for nonroad vehicles and engines (i.e., Tier 4 Final) for the Trenching and Pipeline Construction phase (i.e., Phase 6). Construction equipment would be fitted with appropriate mufflers, and engines would be maintained regularly. The CalEEMod default distances of 18.5 miles and 10.2 miles were used for the worker and vendor trips, respectively. The CalEEMod default distance of 20 miles was used for the hauling trips. Table 3-5 summarizes the construction trip rates and mileages.

Table 3-2: Land Use, RNG Plant, and SoCalGas Pipeline Data for CalEEMod Input

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage (footprint)	Square Feet	Description
Commercial	General Office Building	2.670	1,000 sq. ft.	0.061	2,670	Control Building on site
Industrial	General Heavy Industry	22.045	1,000 sq. ft.	0.51	22,045	Site of Renewable Gas Facility
Parking	Other Asphalt Surfaces	23.240	1,000 sq. ft.	0.53	23,240	Parking Areas (Concrete hardscape and asphalt paving)
Parking	Other Non-Asphalt Surfaces	136.840	1,000 sq. ft.	3.14	136,840	Graded Non-Asphalt Areas
Linear	User Defined Linear	2.40	Mile	–	–	SoCalGas Pipeline
			Project Size	**4.24**	**184,800**	

Sources: Applicant 2023, CalEEMod version 2022.1.1.29.

Notes:

Electric utility: Southern California Edison.

Gas utility: Southern California Gas Company.

Table 3-3: Proposed Project Preliminary Construction Schedule by Phase

Phase #	Phase Name	CalEEMod Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase
1	Earthworks A	Site Preparation	10/28/2025	11/10/2025	5	10
2	Earthworks B	Grading	11/11/2025	1/5/2026	5	40
	Building Construction A		7/13/2026	1/8/2027	5	130
3	Building Construction B	Building Construction	8/7/2026	11/6/2026	5	66
	Building Construction C		5/18/2026	2/26/2027	5	205
4	Paving	Paving	1/11/2027	1/22/2027	5	10
5	Architectural Coating	Architectural Coating	11/7/2026	11/28/2026	5	15
6	SoCalGas Pipeline Construction	Linear, Drainage, Utilities, & Sub-Grade	7/17/2026	4/13/2027	5	193

Table 3-4: Proposed Project Offroad Equipment Used for Construction Phases for CalEEMod Input

Phase #	Phase Name	Equipment Description	Fuel Type	Engine Tier	Qty	Hours/Day	HP	Load Factor
1	Site Preparation	Rubber Tired Dozers	Diesel	Average	3	8	367	0.4
		Tractors/Loaders/Backhoes	Diesel	Average	4	8	84	0.37
2	Grading	Rubber Tired Dozers	Diesel	Average	2	6	148	0.41
		Tractors/Loaders/Backhoes	Diesel	Average	2	6	84	0.37
		Cement and Mortar Mixers	Diesel	Average	1	6	367	0.4
		Sweepers/Scrubbers	Diesel	Average	1	6	36	0.46
		Dumpers/Tenders	Diesel	Average	10	6	16	0.38
		Off-Highway Trucks	Diesel	Average	1	6	376	0.38
		Excavators	Diesel	Average	1	8	36	0.38
3	Building Construction	Cranes	Diesel	Average	2	6	367	0.29
		Forklifts	Diesel	Average	3	8	82	0.2
		Tractors/Loaders/Backhoes	Diesel	Average	1	6	14	0.74
		Aerial Lifts	Diesel	Average	1	6	84	0.37
		Off-Highway Trucks	Diesel	Average	1	6	46	0.45
4	Paving	Tractors/Loaders/Backhoes	Diesel	Average	1	8	84	0.37
		Pavers	Diesel	Average	1	8	81	0.42
		Paving Equipment	Diesel	Average	2	6	89	0.36
		Rollers	Diesel	Average	2	6	36	0.38
		Cement and Mortar Mixers	Diesel	Average	2	6	10	0.56
5	Architectural Coating	Air Compressors	Diesel	Average	1	6	37	0.48
6	Trenching and Pipeline Construction	Bore/Drill rigs	Diesel	Average	1	6	83	0.5
		Excavators	Diesel	Average	1	6	36	0.38
		Rubber Tired Dozers	Diesel	Tier 4 Final	1	6	367	0.4
		Tractors/Loaders/Backhoes	Diesel	Average	1	6	84	0.37
		Cranes	Diesel	Tier 4 Final	1	6	367	0.29
		Graders	Diesel	Average	1	6	148	0.41
		Other General Industrial Equipment	Diesel	Average	1	6	35	0.34
		Air Compressors	Diesel	Average	1	6	37	0.48
		Other Construction Equipment	Diesel	Average	1	6	82	0.42

Notes: Diesel engines greater than 350 HP for Phase 6 (i.e., Trenching and Pipeline Construction) will be EPA Tier 4 Final.

Engine load factors are CalEEMod default values (version 2022.1.1.29).

Table 3-5: Proposed Project Construction Traffic Summary

Phase #	Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
1	Earthworks A	Worker	20.0	18.5	LDA,LDT1,LDT2
2	Earthworks B	Hauling	366.9	20.0	HHDT
		Worker	20.0	18.5	LDA,LDT1,LDT2
3	Building Construction A	Worker	20.0	18.5	LDA,LDT1,LDT2
		Vendor	4.1	10.2	HHDT,MHDT
	Building Construction B	Worker	50.0	18.5	LDA,LDT1,LDT2
		Vendor	4.1	10.2	HHDT,MHDT
	Building Construction C	Worker	50.0	18.5	LDA,LDT1,LDT2
		Vendor	4.1	10.2	HHDT,MHDT
4	Paving	Worker	20.0	18.5	LDA,LDT1,LDT2
5	Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
6	SoCalGas Pipeline Construction	Hauling	0.5	20.0	HHDT
		Onsite truck	2.0	20.0	HHDT
		Worker	50.0	18.5	LDA,LDT1,LDT2

Key: LDA = Light-Duty Automobile; LDT = Light-Duty Truck; MHDT = Medium-Heavy-Duty Truck; HHDT = Heavy-Heavy-Duty Truck

3.2.2 Operation

The term "project operations" refers to the full range of activities that can or may generate criteria pollutant, GHG, and TAC emissions when the project is functioning in its intended use. CalEEMod estimates emissions from the following sources:

- "Mobile" sources, which include emissions from onroad vehicles required to operate the proposed Project;
- "Area" sources, which include emissions from consumer products, architectural coatings, and landscaping equipment;
- "Energy" Sources, which include emissions from building electricity and natural gas usage (non-hearth);
- "Water and Wastewater", which includes the GHG emissions associated with supplying and treating water and wastewater used and generated by the project land uses;
- "Waste", which includes the GHG emissions at landfills associated with disposal of solid waste generated for each project land use subtype; and
- "Refrigerants", which includes the fugitive GHG emissions associated with building air conditioning (A/C) and refrigeration equipment.

Emissions from the abovementioned sources are collectively referred to as "miscellaneous operational sources" in this document.

For industrial projects and some commercial projects, equipment operation and manufacturing processes, i.e., permitted stationary sources, can be of greatest concern from an emissions standpoint. For this Project, the stationary sources of combustion byproducts, criteria pollutants, and GHGs are the RNG thermal oxidizer, RNG flare, and emergency generator.

This report evaluates the total operational emissions increases from the stationary sources, which include the combustion of pilot fuel (natural gas) and tail gas in the RNG thermal oxidizer, the combustion of pilot fuel (natural gas) and off-spec gas in the RNG flare, as well as the combustion of natural gas in the emergency generator. Combustion of off-spec gas sent to the RNG flare for disposal during transient conditions (e.g., during off-spec composition or system upset), is presented in this report (Appendix D) but is excluded from the analysis since the thermal oxidizer and RNG flare will not be used simultaneously. Under normal operating conditions, only the thermal oxidizer will be operating, with the RNG flare operating only in cases of a system upset or off-spec gas composition unfit to send to the SoCalGas pipeline.[1] Therefore, RNG flare emissions are based on the supplemental pilot fuel (natural gas) usage, which is continuously operating.

CO_2 and CH_4 may be emitted from various RNG production process components (e.g., fittings, flanges, connectors, pumps, pressure release valves, etc.) in the RNG facility, SoCalGas pipeline, and POR station (AKA, Fugitive emissions). Fugitive emissions were estimated using SCAQMD Guidelines for Reporting VOC Emissions from Component Leaks, Continuous Leaking (SCAQMD 2015) as shown in Appendix D.

Emissions from combustion for each of these sources along with fugitive emissions were calculated separately and entered into CalEEMod under the "User Defined" category. Further details regarding the source dimensions, specifications, and a process flow diagram of the project are presented in Appendix B.

3.3 Regional CEQA Significance of Criteria Pollutants

3.3.1 Construction

A project's construction phase produces many types of emissions, and generally, particulate matter less than 10 microns in size (PM_{10}) [including particulate matter less than 2.5 microns in size ($PM_{2.5}$)] in fugitive dust and diesel engine exhaust are the pollutants of greatest concern. Construction-related emissions can cause substantial increases in localized concentrations of PM_{10}, as well as affecting PM_{10} compliance with ambient air quality standards on a regional basis. The use of diesel-powered construction equipment emits ozone precursors NO_x and reactive organic gases (ROG), as well as diesel particulate matter (DPM); however, the use of diesel-powered equipment would be minimal. Use of architectural coatings and other materials associated with finishing buildings may also emit ROG and toxic air contaminants (TACs). CEQA significance thresholds address the impacts of construction activity emissions on local and regional air quality. Thresholds are also provided for other potential impacts related to Project construction, such as odors and TACs.

The SCAQMD's approach to CEQA analyses of fugitive dust impacts is to require implementation of effective and comprehensive dust control measures rather than to require detailed quantification of emissions. PM_{10} emitted during construction can vary greatly depending on the level of activity, the specific operations taking place, the equipment being operated, local soils, weather conditions, and other factors, making quantification difficult. Despite this variability in emissions, experience has shown that there are several feasible control measures that can be reasonably implemented to

[1] Under normal operating conditions, 6,000 scfm of landfill gas, after going through the LFGTS, will be split between 1) the thermal oxidizer running for up to 8,760 hours annually, and 2) the product gas being sent to the SoCalGas pipeline, with no fuel remaining to be sent to the proposed flare. A simplified PFD of the process is shown in Figure 1-2 and details on the breakdown and flow of each component of the raw LFG are shown in Appendix B, page 8.

significantly reduce fugitive dust emissions from construction. For larger projects, the SCAQMD has determined that compliance with an approved fugitive dust control plan comprising Best Management Practices (BMPs), primarily through frequent water application, constitutes sufficient control to reduce PM_{10} impacts to a level considered less than significant.

CalEEMod outputs are in Appendix A. SCAQMD Rule 403, Fugitive Dust, requires that water be applied in sufficient quantities to prevent the generation of visible dust plumes, several watering related options were chosen in CalEEMod (i.e., water exposed surfaces, water unpaved construction roads, limit vehicle speed on unpaved roads, and sweep paved roads). As additional CalEEMod dust controls, the Project intends to implement a 15 mile per hour (mph), which further reduces fugitive dust emissions. For this project, applicable SCAQMD and Planning Department approved BMPs (e.g., compliance with SCAQMD Rule 403, Fugitive Dust) will be implemented as project design features. This is a standard Condition of Approval and pursuant to CEQA, is not considered mitigation.

Table 3-6 shows the peak daily criteria pollutants emissions for construction of proposed Project and evaluates them against SCAQMD significance thresholds. As shown in Table 3-6, mass emissions of criteria pollutants from construction would be below applicable SCAQMD significance thresholds. No mitigation measure is needed to reduce regional emissions to a *less-than-significant* level; MM-AQ-1, which is mentioned later in the report, was applied to phase 6 of the construction to reduce the health impacts of the proposed SoCalGas pipeline construction as explained in Section 4.2.

Table 3-6: Construction Emissions Summary and Significance Evaluation

Criteria Pollutants	Construction Emissions (lbs/day)	Threshold (lbs/day)	Significant?
ROG (VOC)	20.9	75	**No**
NO_x	56.6	100	**No**
CO	39.0	550	**No**
SO_x	0.22	150	**No**
Total PM_{10}	16.4	150	**No**
Total $PM_{2.5}$	4.6	55	**No**

Sources: SCAQMD 2023, CalEEMod version 2022.1.1.29.

Notes:

lbs/day are winter or summer maxima for planned land use.

Total PM_{10}/$PM_{2.5}$ comprises fugitive dust plus engine exhaust.

3.3.2 Operation

Table 3-7 shows baseline and the proposed Project's criteria pollutants emissions for operations and evaluates the incremental change in emissions as a result of the proposed Project against SCAQMD significance thresholds.

The Project's baseline is defined as the emissions associated with the highest daily LFG consumption at the FRB Landfill's flare station for the prior two calendar years (2023 and 2024).[2] Daily emissions are estimated from emission factors that are back-calculated from permit conditions.

The operational emissions include the calculated operational emissions from Miscellaneous Operational Sources (i.e., mobile, area, energy sources) as well as the stationary sources (i.e., pilot fuel (natural gas) and tail gas for the thermal oxidizer, pilot fuel for the flare, as well as natural gas for emergency generator usage). The difference ([G]) between the proposed Project ([F]) and baseline emissions ([A]) represent the incremental change in emissions, and these incremental changes are compared to the SCAQMD CEQA significance thresholds ([H]). These emissions represent the peak operating day with the TOU, Flare, and Emergency Engine operating on the same day. This is a conservative estimate because a normal operating day would not involve emergency engine usage, which is limited to maintenance and testing hours only.

As shown in Table 3-7, mass emissions of criteria pollutants from operation are below applicable SCAQMD CEQA significance thresholds. The proposed Project would provide a beneficial use for the LFG generated from the landfill and therefore, would have a less than significant impact.

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[2] Engines located at the existing Bowerman Power Plant are not affected by the proposed project, and thus, are not included in the baseline.

Table 3-7: Operational Emissions Summary and Significance Evaluation

Emission Source		Criteria Pollutant Emissions on Peak Operating Day [8] (lb/day)					
		VOC	NO_x	CO	SO_x[9]	PM_{10}[10]	$PM_{2.5}$[10]
[A]	Baseline Existing LFG Flare Emissions[1]	84.14	304.37	236.73	140.94	138.75	138.75
[B]	Proposed TOU[2]	4.33	25.27	57.75	124.26	5.16	5.16
[C]	Proposed Flare[3]	0.01	0.14	0.14	0.001	0.01	0.01
[D]	Proposed Engine[4]	0.66	4.01	6.69	0.02	0.40	0.40
[E]	Proposed Miscellaneous Operational Sources[5]	0.83	0.32	1.59	0.00	0.12	0.05
[F] = [B + C + D + E]	**Proposed Project[6]**	**5.83**	**29.74**	**66.17**	**124.28**	**5.69**	**5.62**
[G] = [F] - [A]	**Proposed Project - Baseline Existing LFG Flare Emissions**	**-78.31**	**-274.63**	**-170.56**	**-16.65**	**-133.07**	**-133.07**
[H]	SCAQMD Mass Daily Thresholds for Operation [7]	55	55	550	150	150	150
Is [G] > [H]?	**Significant?**	**No**	**No**	**No**	**No**	**No**	**No**

[1] Baseline is calculated as the emissions associated with the highest daily LFG consumption at the FRB Landfill's flare station for the prior two calendar years (2023 and 2024). Engines located at the existing Bowerman Power Plant are not affected by the proposed project, and thus, are not included in the baseline.

[2] Proposed TOU: 2,309 scfm Tail Gas 1 (~6.3 mmBtu/hr) + 883 scfm Tail Gas 2 (~6.1 mmBtu/hr) + 280 scfm Supplemental Fuel (~17.6 mmBtu/hr), 24 hours. Further information regarding tail gas compositions and fuel heat ratings are provided in Appendices B and D.

[3] Proposed Flare: ~1.6 scfm Supplemental Fuel (0.1 mmBtu/hr) operating 24 hours a day.

[4] Proposed Engine: Engine is natural gas fired and has a maximum permitted daily usage of 24 hours per day (including maintenance and testing and emergency use).

[5] Proposed Miscellaneous Operational Sources: Includes Mobile, Area, and Energy sources from CalEEMod.

[6] Proposed Project: Proposed TOU + Proposed Flare + Proposed Engine + Proposed Miscellaneous Operational Sources.

[7] Source: SCAQMD 2023.

[8] Peak operating day with emergency engine usage is shown here. A typical day would not involve emergency generator usage.

[9] SOx EF is based on daily/hourly BACT basis (85 ppm or 14.354 lb/mmscf). Proposed TOU SOx emissions include 100% of the Landfill Tail Gas SOx emissions + SOx from supplemental fuel. Proposed Flare SOx emissions include SOx from supplemental fuel.

[10] Total PM_{10} / $PM_{2.5}$ comprises fugitive dust plus engine exhaust.

3.4 Localized Significance Threshold Analysis

The SCAQMD's LST methodology (SCAQMD 2008a) was used to analyze the neighborhood scale impacts of NO_x, carbon monoxide (CO), PM_{10}, and $PM_{2.5}$ associated with Project-specific mass emissions. Introduced in 2003, the LST methodology was revised in 2008 to include the $PM_{2.5}$ significance threshold methodology and update the LST mass rate lookup tables for the new 1-hour nitrogen dioxide (NO_2) standard.

For determining localized air quality impacts from small projects in a defined geographic source-receptor area (SRA), the LST methodology provides mass emission rate lookup tables for 1-acre, 2-acre, and 5-acre parcels by SRA. The tabulated LSTs represent the maximum mass emissions from a project that will not cause or contribute to an exceedance of California or national ambient air quality standards (CAAQS or NAAQS) for the above pollutants and were developed based on ambient concentrations of these pollutants for each SRA in the South Coast Air Basin (SCAQMD 2008a).

For most land use projects, the highest daily emission rates occur during the site preparation and grading phases of construction; where applicable, these maximum daily emissions were used in the LST analysis.

The proposed Project site is 4.24 acres in SRA Zone 19 – Saddleback Valley. As a conservative estimate, the 2-acre screening lookup tables were used to evaluate NO_x, CO, PM_{10}, and $PM_{2.5}$ impacts on nearby receptors. The nearest receptor is approximately 50 meters (165 feet) away from the boundary of the proposed construction site. Therefore, the impact evaluation was performed using the closest distance within SCAQMD LST tables of 50 meters for construction (SCAQMD 2008a).

3.4.1 Construction

The LST results provided in Table 3-8 show that on-site emissions from construction would meet the LST passing criteria at the nearest receptors. Thus, impacts would be less than significant. No mitigation measure is needed to reduce localized emissions to a *less-than-significant* level; MM-AQ-1, which is mentioned later in the report, was applied to phase 6 of the construction to reduce the health impacts of the proposed SoCalGas pipeline construction as explained in Section 4.2.

Table 3-8: Construction Localized Significance Threshold Evaluation

Criteria Pollutants	Construction Emissions (lbs/day)	Threshold (lbs/day)	Significant?
NO_x	56.6	127	**No**
CO	39.0	1,227	**No**
PM_{10}	16.4	18	**No**
$PM_{2.5}$	4.6	6	**No**

Sources: SCAQMD 2008a, CalEEMod version 2022.1.1.29.

Notes:

SRA: Zone 19 – Saddleback Valley. 2-acre area, 50 meters to receptor.

3.4.2 Operation

An AQIA was conducted to evaluate localized air quality impacts from operational emissions and is discussed in Section 4.3.1.

3.5 Greenhouse Gas Emissions from Construction and Operation

GHGs – primarily CO_2, methane (CH_4), and nitrous oxide (N_2O), collectively reported as carbon dioxide equivalents (CO_2e) – are directly emitted from stationary source combustion of natural gas in equipment such as water heaters, boilers, process heaters, and furnaces. GHGs are also emitted from mobile sources, such as on-road vehicles and off-road construction equipment, burning fuels such as gasoline, diesel, biodiesel, propane, or natural gas (compressed or liquefied). Indirect GHG emissions result from electric power generated elsewhere (i.e., power plants) used to operate process equipment, lighting, and utilities at a facility. Also, included in GHG quantification is electric power used to pump the water supply (e.g., aqueducts, wells, pipelines) and disposal and decomposition of municipal waste in landfills (CARB 2022a).

California's Building Energy Efficiency Standards are updated on an approximately 3-year cycle. The 2022 standards improved upon the 2019 standards for new construction of, and additions and alterations to, residential, commercial, and industrial buildings. The 2022 standards went into effect on January 1, 2023 (CEC 2022).

Since the Title 24 standards require energy conservation features in new construction [e.g., high-efficiency lighting; high-efficiency heating, ventilation, and air conditioning (HVAC) systems; thermal insulation; double-glazed windows; water conserving plumbing fixtures; etc.], they indirectly regulate and reduce GHG emissions.

Using CalEEMod, direct on-site and off-site GHG emissions were estimated for construction and operation, and indirect off-site GHG emissions were estimated to account for electric power used by the proposed Project, water conveyance, and solid waste disposal. CalEEMod also quantifies common refrigerant GHGs (abbreviated as "R" in the model output) used in air conditioning and refrigeration equipment, some of which are hydrofluorocarbons (HFCs).

The SCAQMD officially adopted an industrial facility mass emissions threshold of 10,000 metric tons (MT) CO_2e per year (SCAQMD 2023).

The City of Irvine adopted its Climate Action and Adaptation Plan (CAAP) in June 2021. The measures identified in the CAAP represent the City's actions to achieve the GHG reduction targets of Assembly Bill (AB) 32 for target year 2030. Local measures included in the CAAP include:

- An energy measure that directs the City to create an energy action plan to reduce energy consumption citywide;
- Land use and transportation measures that encourage alternative modes of transportation (walking, biking, and transit), reduce motor vehicle use by allowing a reduction in parking supply, voluntary transportation demand management to reduce vehicle miles traveled, and land use strategies that improve jobs-housing balance (increased density and mixed-use); and
- Solid waste measures that reduce landfilled solid waste in the City.

Table 3-9 shows a breakdown of the Project construction GHG emissions over the approximately 1.5 years construction period. Table 3-10 shows a breakdown of the Project operation GHG emissions. Details of the analysis are shown in Appendix D. As shown in Appendix D, Table D.23, baseline GHG emissions from existing flare operations are estimated at 135,844 MT/yr CO2e.

Table 3-11 combines the emissions from Table 3-9 and Table 3-10 for comparison to baseline emissions. Baseline emissions include CO_2, CH_4, and N_2O based on total inlet flow rate of 6,000 scfm, the equivalent fuel rate being directed to the proposed RNG facility (Appendix B (page 8, Process Point 1). As shown in Table 3-11, incremental GHG emissions from operations are below the applicable SCAQMD CEQA significance threshold. The baseline comparison was also broken down by source contribution and shows that the total GHGs associated with the proposed LFG usage is roughly equivalent to the GHGs from the baseline LFG flare station, with the additional GHGs coming from the pilot gas combustion at the flare and thermal oxidizer, emergency generator usage, fugitive emissions, and construction/miscellaneous operational sources. The Project is expected to have a less than significant impact.

Table 3-9: Construction Greenhouse Gas Emissions Summary by Year

Year	CO_2	CH_4	N_2O	R	CO_2e
	MT/yr	MT/yr	MT/yr	MT/yr	MT/yr
2025	520.30	0.04	0.07	0.40	542
2026	507.59	0.02	0.02	0.25	514
2027	163.84	0.01	0.00	0.06	165
Total	**1,191.73**	**0.06**	**0.09**	**0.70**	**1,221**

Source: CalEEMod version 2022.1.1.29

Table 3-10: Operation Greenhouse Gas Emissions Summary by Sector/Equipment

Year	CO_2	CH_4	N_2O	R	CO_2e
	MT/yr	MT/yr	MT/yr	MT/yr	MT/yr
Mobile	17.79	0.00	0.001	0.03	18
Area	0.50	0.00	0.000	0.00	1
Energy	116.17	0.01	0.001	0.00	117
Water	10.92	0.18	0.004	0.00	17
Waste	2.66	0.27	0.000	0.00	9
Refrigeration	0.00	0.00	0.000	0.95	1
Thermal Oxidizer (TOU)[1,2]	74,875.99	0.26	0.03	0.00	74,890
Off-Spec Flare[1]	46.46	0.00	0.00	0.00	47
Genset with ICE	18.43	0.00	0.00	0.00	18
Fugitives	0.60	12.23	0.00	0.00	306
Off-site Combustion of Product Gas[3]	69,061.49	1.28	0.13	0.00	69,132
Total	**144,151.00**	**14.23**	**0.16**	**0.98**	**144,555**

Source: CalEEMod version 2022.1.1.29

[1]The control of process gas is exclusively through the thermal oxidizer or the flare. Maximum GHG emissions results from the combustion of process gas from the TOU and Flare were evaluated in Appendix D. The combustion from the TOU, representing the maximum potential GHG emissions and normal operations is shown in this table.

[2]Thermal Oxidizer CO_2e is comprised of 66,686.79 MT/yr (rounded to 66,687 MT/yr in Table 3-11) from tail gas combustion and 8,203.60 MT/yr (rounded to 8,204 MT/yr in Table 3-11) from pilot gas combustion.

[3]Off-site Combustion of Product Gas is based on 2,412 scfm product gas stream flowrate from PFD in Appendix B (page 8, Process Point 5), Continuous operation.

Table 3-11: Greenhouse Gas Emissions Device Breakdown and Significance Evaluation

Emission Source		GHG Emissions (MT/yr)				
		CO_2	CH_4	N_2O	R	Total CO_2e
[A]	**Baseline Existing LFG Flare Station Emissions[1]**	**135,768**	**1.39**	**0.14**	**--**	**135,844**
[B]	TOU/Flare[2] (from Tail Gas)	66,681	0.11	0.01	--	66,687
[C]	Off-site Combustion of Product Gas[3]	69,061	1.28	0.13	--	69,132
[D] = [B] + [C]	**Total GHGs associated with Proposed Landfill Gas Usage[4]**	**135,742**	**1.39**	**0.14**	**--**	**135,818**
[E]	TOU[2] (from Pilot Gas)	8,195	0.15	0.02	--	8,204
[F]	Flare[5] (from Pilot Gas)	46	0.00	0.00	--	46.51
[G]	Emergency Engine[6]	18	0.00	0.00	--	18.45
[H]	Fugitive Emissions[7]	1	12.23	--	--	306.44
[I]	Construction[8]	40	0.00	0.00	0.02	40.70
[J]	Miscellaneous Operational Sources[9]	148	0.46	0.01	0.98	162.17
[K] = [B + C + E + F + G + H + I + J]	**Proposed Project**	**144,191**	**14.23**	**0.16**	**1.00**	**144,596**
[L] = [K] - [A]	**Proposed Project - Baseline Existing LFG Flare Emissions**	**8,423**	**12.85**	**0.02**	**1.00**	**8,752**
[M]					SCAQMD GHG Threshold	10,000
Is [L] > [M]?					**Significant?**	**No**

Sources: SCAQMD 2008b, Yorke 2025 (Appendix D), CalEEMod version 2022.1.1.29.

Notes:

[1]Baseline existing flare station emissions are based on total inlet flow rate of 6,000 scfm, the equivalent fuel rate being directed to the proposed RNG facility (Appendix B (page 8, Process Point 1), Continuous operation. The total inlet flow rate was separated into CO_2 and CH_4 components in the stream, with CO_2 emissions directly emitted from the flare and CH_4 combustion estimated using natural gas GHG emission factors.

[2]Proposed TOU: 2,309 scfm Process Gas 1 (~6.3 mmBtu/hr) + 883 scfm Process Gas 2 (~6.1 mmBtu/hr) + 280 scfm Supplemental Fuel (~17.6 mmBtu/hr), Continuous operation. The control of process gas is exclusively through the thermal oxidizer or the flare. Maximum GHG emissions results from the combustion of process gas from the TOU and Flare were evaluated in Appendix D. The combustion from the TOU, representing the maximum potential GHG emissions and normal operations is shown in this table.

[3]Off-site Combustion of Product Gas is based on 2,412 scfm product gas stream flowrate from PFD in Appendix B (page 8, Process Point 5), Continuous operation.

[4]Note that the total GHGs associated with Proposed LFG usage is roughly equivalent to the GHGs from baseline LFG Flare Station

[5]Proposed Flare: ~1.6 scfm Supplemental Fuel (0.1 mmBtu/hr), Continuous operation. Off-Spec Flare Gas is not included since the flare will not be used concurrently with the Thermal Oxidizer, under which condition, only pilot gas consumption would occur at flare. Off-Spec Flare will only be operated in case of a system upset or if RNG is off-spec.

[6]Proposed Engine: Engine is natural gas fired and used for maintenance and testing.

[7]Fugitive Emissions: Component counts from Tent Engineering and SoCalGas, using SCAQMD Guidelines for Reporting VOC Emissions from Component Leaks, Continuous Leaking (SCAQMD 2015)

[8] Construction emissions shown in Table 3-9 (1,221 MT CO2e), amortized over 30 years.

[9] Miscellaneous Operational Sources: Include Mobile, Area, and Energy sources from CalEEMod.

4.0 MODELING ANALYSIS

CEQA requires that the environmental impacts of a proposed project be identified and assessed. If these impacts are found to be significant, the impacts must be mitigated to the extent feasible.

The SCAQMD has developed CEQA thresholds for determination of significance and determination if AQIA modeling is required (SCAQMD 2023); these criteria are described further in Section 5. Per SCAQMD Final Localized Significance Threshold Methodology, LST analysis is not applicable for project sites where emissions are distinctly non-uniform across the site (SCAQMD, 2008a); therefore, an AQIA was conducted for operations.

The modeling analyses discussed in this section include criteria pollutant AQIA modeling with respect to the NAAQS/CAAQS/SCAQMD thresholds for operational activities and two separate HRAs for construction and operations.

The methodology used to develop the AQIA and HRAs is described below and based on SCAQMD guidance documents and policies, in particular, "South Coast AQMD Modeling Guidance for AERMOD" (SCAQMD 2024). The AERMOD dispersion model was used as the basis for both the AQIA and HRAs.

4.1 Dispersion Modeling

4.1.1 Air Dispersion Model

The air dispersion model used for the AQIA/HRAs is the **A**MS/**E**PA **R**egulatory **Mod**el (AERMOD). AERMOD is a steady-state plume dispersion model that incorporates air dispersion calculations based on planetary boundary layer turbulence structure and scaling concepts. AERMOD includes the treatment of both surface and elevated sources and simple and complex terrain. AERMOD, like most dispersion models, uses mathematical algorithms to characterize the atmospheric processes that disperse pollutants emitted by a source. Using emission rates, release parameters, terrain characteristics, and meteorological inputs, AERMOD calculates downwind pollutant concentrations at specified receptor locations.

The Lakes Environmental Software Implementation/user interface, AERMOD View™, version 13.0.0, was used for this Project. This version of AERMOD View™ implements version 24142 of AERMOD.

4.1.2 Modeling Options

AERMOD View™ allows the user to select from a variety of dispersion options. For this project, "Regulatory Default" options were used.

4.1.3 Meteorological Data

Five years of AERMOD-ready preprocessed meteorological data files for 2017-2021 were obtained from the SCAQMD for the Mission Viejo (MSV) meteorological station (SCAQMD 2024).

4.1.4 Terrain Data

Digital elevation data were imported into AERMOD and elevations were assigned to receptors, buildings, and emissions sources, as necessary. Future on-site buildings have elevations set to their post-construction elevations. National Elevation Dataset (NED) elevation data were obtained through the AERMOD View™ WebGIS import feature. The dataset has a resolution of approximately 10 meters. Per SCAQMD modeling guidance, since some receptors are lower and some receptors are higher than the base elevation of the sources, AERMOD was run twice– once using the default elevated option and the second time using the non-default (flat) option. The maximum ground-level concentration from both runs, whichever is greater, is reported.

4.1.5 Urban/Rural Dispersion Coefficient

AERMOD allows for the use of urban or rural dispersion coefficients. The determination of whether the facility is in an urban or rural area followed the Auer method noted in the References section of 40 CFR Part 51 Appendix W. The Auer method requires drawing a circle with a 3-kilometer radius centered on the centroid of the emission source locations and classifying the land use types within the circle as urban or rural according to a set of criteria. If 50% or more of the land use types within the circle meet the urban criteria, the facility is considered to be in an urban area. The 3-km Auer method circle is shown in Appendix E.

Consistent with this guidance, the model uses rural dispersion coefficients, with more than 50% of the land use types within the circle meeting the criteria to be classified as rural.

4.1.6 Receptor Locations

Grid receptors representing nearby residents, sensitive receptors, and off-site workers were located:

- Every 10 meters along the project boundary;
- At 50-meter spacing from the center of source locations out to 1,000 meters; and
- At 200-meter spacing between 1,000 meters and 5,000 meters from the center of source locations.

For the HRA, additional receptor grids were placed in residentially dense areas to ensure worst-case concentrations were captured.

For the construction HRA, since AERMOD does not correctly predict concentrations for receptors within volume source exclusion zones, receptors located within the project boundary or within the truck volume source exclusion zone were excluded.

Figure 4-1 shows the facility layout, buildings, and receptor locations.

Figure 4-1: Air Dispersion Modeling Receptor Setup

Notes:

RNG Plant buildings shown in blue. Project boundary shown in red. Receptor locations shown in yellow.

4.1.7 Buildings

For the operational HRA and AQIA, the modeling included existing and future on-site and off-site structures expected to have the potential to result in downwash effects. Building downwash effects were assessed for all emissions sources using the Building Profile Input Program for PRIME (BPIPPRM).

Building locations are shown in Figure 4-1. Building locations and dimensions are included with the AERMOD Project files.

Buildings were not included in the construction HRA since the modeling solely involves volume and line-volume sources, neither of which are affected by building downwash.

4.1.8 Source Information and Release Parameters

For the HRAs, AERMOD was run with a unit emission rate [1 gram per second (g/s)] for each source to calculate the concentration of TACs from each source per unit emission rate, known as X/Q (Chi/Q), for 1-hour and period (annual) averaging time options per receptor. The modeled X/Q concentration was calculated for each source, at each receptor, for each averaging time for input into the Hotspots Analysis and Reporting Program, version 2 (HARP2).

4.1.8.1 Construction

HRA modeling was conducted for the DPM exhaust from the construction equipment and delivery trucks. The construction HRA encompassed all stages of construction spanning the 1-year period.

Source release parameters for each source are described in detail below; the sources are shown in Figure 4-2. DPM emissions from the RNG Plant construction were modeled as a 47,961 square feet surface-based volume source in the middle of the site, corresponding to the total on-site land use in Table 3-1. The pipeline construction trucks were parameterized in AERMOD as a 3,917-meter (2.43-mile) line-volume source. The path was set based on the proposed pipeline trenching pathway. The line-volume source represents a series of separated volume sources with parameters based on truck dimensions and the algorithms in the United States Environmental Protection Agency's (U.S. EPA's) Haul Road Workgroup for volume sources (EPA 2012).

Table 4-1: Source Parameters – RNG Facility Construction

Source ID	Source Type	Release Height (m)	Length of Side (m)	Initial Lateral Dimension (m)	Initial Vertical Dimension (m)
RNG_FAC	Volume	2.5	131.06	30.48	1.16

Table 4-2: Source Parameters – SoCalGas Pipeline Construction

Source ID	Source Type	Plume Height (m)	Plume Width (m)	Release Height (m)	Total Length (m)
PIPELINE	Line Volume	5.1	9.0	2.55	3917

Figure 4-2: Construction HRA Source Setup

Notes:

Volume source for the RNG Plant construction shown in red.
Truck travel line volume source shown in blue.

4.1.8.2 Operations

An AQIA and HRA for the proposed Project were prepared to evaluate criteria pollutant levels and health risk impacts due to operational emissions. The equipment and operations that would contribute to the emissions of criteria pollutants and TACs from the combustion equipment, and thus were included in the AQIA/HRA, are:

- The thermal oxidizer unit that uses tail gas from the landfill and natural gas as the supplemental fuel;
- The off-spec flare pilot that uses natural gas; and
- The generator set ICE that uses natural gas.

Figure 4-3 shows the location of each source.

Figure 4-3: Operational AQIA/HRA Source Setup

Notes:

Point sources for flare, thermal oxidizer unit, and generator set with ICE shown in red.
Proposed Project building layout shown in blue.

All stationary sources were modeled as point sources, including the flare, thermal oxidizer unit, and generator set with ICE. The emissions for the point sources were based on the methodology discussed in Section 3.2.2, and further shown in Appendix D.

The release parameters utilized for each source are shown in Table 4-3.

For the AQIA, emissions for each criteria pollutant and source were used in AERMOD. Maximum hourly, daily, and annual emissions were used in modeling all hourly, 24-hour, and annual averaging periods, respectively. Maximum 8-hour emissions were used in modeling the 8-hour averaging period for CO.

For the HRAs, AERMOD was run with a unit emission rate for each source for 1-hour and period averaging times.

Table 4-3: Source Parameters – RNG Plant Operation

Source ID	Source Description	UTM Easting (m)	UTM Northing (m)	Release Height (ft)	Exit Temperature (°F)	Inside Diameter (ft)	Exhaust Flow (scfm)	Exit Velocity (m/s)
FLARE	Off-Spec Flare	434,255.01	3,730,882.74	50	1,018	11.77	150,000	7.003
ICE	CAT DG150 Backup Generator ICE	434,246.91	3,730,967.73	6.15	1,304	0.4167	1,177	43.852
TOU	PEI Thermal Oxidizer – Pilot Gas	434,255.52	3,730,894.15	50	1,000	5.6	39,000	8.044

4.2 Construction – Health Risk Assessment

The principal TAC emitted during Project construction would be DPM from diesel-powered equipment. DPM emissions were derived from the CalEEMod run in Attachment A, where DPM is assumed to be the same amount as the exhaust PM_{10} emissions.

Although the total Project construction period is expected to occur over a span of approximately 1.5 years, the majority of DPM-emitting construction phases overlap during a 1-year period. Thus, a conservative approach was used, where the total DPM emissions from the RNG Plant and SoCalGas pipeline construction over the approximately 1.5-year period were assumed to simultaneously emit over a 1-year period. The DPM emission rates for the RNG Plant and SoCalGas pipeline construction are shown in Table 4-4. As stated in Section 3.2.1, for mitigated emissions, all construction equipment greater than 350 HP for the Trenching and Pipeline Construction phase (i.e., Phase 6) were assumed to use Tier 4 engines (MM-AQ-1). Annual emission rates were calculated by conservatively assuming that the total DPM exhaust emissions during construction occur over a single year.

Table 4-4: DPM Emissions for RNG Plant and SoCalGas Pipeline Construction

Construction Phase	DPM (PM_{10}) Exhaust Emissions During Construction (lbs)	Working Days	Annual Emission Rate[1] (lbs/year)
RNG Facility Construction	122.54	346	122.54
SoCalGas Pipeline Construction	60.64	193	60.64

Source: CalEEMod version 2022.1.1.29.

1) To be conservative, it was assumed that the total DPM exhaust emissions during construction occur over a single year.

4.2.1 Health Risk Assessment Calculations

This HRA was conducted in accordance with SCAQMD Risk Assessment Procedures (SCAQMD 2024) and the Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Guidance Manual (OEHHA 2015).

The construction HRA health risk calculations were performed using the HARP2 Air Dispersion Modeling and Risk Tool (ADMRT, version 22118, CARB 2022b). The X/Q 1-hour and annual values that were determined for each source using AERMOD were imported into HARP2 and used in conjunction with hourly and annual emissions to determine the ground-level concentration (GLC) of DPM to an individual. The GLCs were then used to estimate the long-term cancer health risk to an individual. Since DPM is the only TAC in this HRA, and only carcinogenic and chronic toxicity values are documented for DPM, only cancer and chronic risk assessments were conducted.

A description of the health risk indices and associated calculations conducted in HARP2 is provided below. Table 4-5 provides a listing of the HARP2 options that were selected for the analysis.

4.2.2 Cancer Risk

Cancer risk is the estimated probability of a maximally exposed individual potentially contracting cancer as a result of exposure to TACs over a period of time. Cancer risk at all receptors was estimated over a 1-year period, corresponding to the 1-year construction period shown in Table 4-4. This provides a conservative health risk estimate since the total DPM emissions are assumed to be emitted over a single year, which provides the largest overlap with the highest sensitive specific age group weighting factors (3^{rd} trimester and 0-2 years).

Residential receptor cancer risk estimates were calculated using CARB's Risk Management Policy (RMP), "RMP Using the Derived Method," and off-site workplace cancer risk estimates used the "OEHHA Derived" calculation method. The RMP uses high-end breathing rates (95^{th} percentile) for children from the third trimester through age 2 and 80^{th} percentile breathing rates for all other ages for residential exposures (CARB 2015). The "OEHHA Derived" method uses high-end exposure parameters for the top two exposure pathways and mean exposure parameters for the remaining pathways for cancer risk estimates. The "RMP Using the Derived Method" combines the two approaches.

4.2.3 Chronic Hazard Index

DPM also has non-cancer health risk due to long-term (chronic) exposure. The Chronic Hazard Index (HIC) is the sum of the individual substance HICs for all TACs affecting the same target organ system. Chronic risk was calculated using the "OEHHA Derived" Method at all receptors for an annual exposure duration. The same exposure pathways, as outlined in Table 4-5, were used in the HIC assessment.

4.2.4 Acute Hazard Risk

Some TACs may have non-cancer health risk due to short-term (acute) exposures. Acute Hazard Index (HIA) is the sum of the individual substance HIAs for all TACs affecting the same target organ system. Since DPM does not have an acute reference exposure level (REL), no acute risks were estimated for the construction scenario.

Table 4-5: Construction HRA – HARP2 Model Options

Parameter	Assumptions				Comments
Multi-Pathway					
Inhalation	Res	☒	Work	☒	–
Soil	Res	☒	Work	☒	–
Dermal	Res	☒	Work	☒	"Warm" climate
Mother's Milk	Res	☒	Work	☐	–
Drinking Water	Res	☐	Work	☐	–
Fish	Res	☐	Work	☐	–
Homegrown Produce	Res	☒	Work	☐	Default for "Households that Garden"
Beef/Dairy	Res	☐	Work	☐	–
Pigs, Chickens, and/or Eggs	Res	☐	Work	☐	
Deposition Velocity	0.02 m/s				
Residential Cancer Risk Assumptions					
Exposure Duration	1 year				Corresponding to overlapped 1-year construction period
Fraction of Time at Home	3rd Trimester to 16 years: Off 16 years to 30 years: On				–
Analysis Option	RMP Using the Derived Method				–
Worker Cancer Risk Assumptions					
Exposure Duration	1 year				Corresponding to overlapped 1-year construction period
Analysis Option	OEHHA Derived Method				–
Inhalation Rate Basis	8-hour breathing rates, moderate intensity				–
Worker Adjustment Factor	Yes, 5.6				Construction will take place 5 days/week, 6 hours/day
Residential and Worker Non-Cancer Risk Assumptions					
Analysis Option	OEHHA Derived Method				–
Inhalation Rate Basis	Long-term 24-hour (resident) Moderate 8-hour (worker)				–
Worker Adjustment Factor	1				–

4.2.5 Construction HRA Results

The construction HRA results predict that all health risk factors would be less than the CEQA significance thresholds at all actual receptors with implementation of the proposed mitigation measure (MM-AQ-1). The results of the HRA are summarized in Table 4-6.

The maximally exposed individual resident (MEIR) was predicted to be at the end of the pipeline construction line within the Portola Springs community, and the maximally exposed individual worker (MEIW) was predicted to be located at one of the administrative buildings on the landfill utilized by OCWR staff. Figure 4-4 shows the locations of the MEIR and MEIW receptors.

Sensitive receptors were evaluated as part of the receptor grid and have impacts below the maximum impact identified at the MEIR or MEIW, with the closest sensitive receptors located at Crean Lutheran High School and Stonegate Elementary School. All health risk values were predicted to be less than the CEQA significance thresholds and are shown in Table 4-6.

Figure 4-4: Maximally Exposed Receptors – Construction HRA Cancer Risk

Notes:

RNG Plant shown in red. Truck travel line volume source shown in blue.

MEIR shown in green square. MEIW shown in blue square.

Table 4-6: Summary of Construction HRA Results

Risk[1]	Receptor	Receptor	UTM Easting Coordinate (m)	UTM Northing Coordinate (m)	Estimated Risk Value	CEQA Threshold[2]	Health Risk Significant?
Cancer	MEIR	17	431,458	3,730,677	4.39	10 in one million	**No**
	MEIW	3,110	434,171	3,731,089	2.51		**No**
Chronic	MEIR	17	431,458	3,730,677	0.0049	1.0	**No**
	MEIW	3,110	434,171	3,731,089	0.0348		**No**

1. Maximum risk values from flat terrain AERMOD run.
2. Source: SCAQMD 2023.

4.2.6 Mitigation Measures

MM-AQ-1: Construction equipment greater than 350 HP for the Trenching and Pipeline Construction phase (i.e., Phase 6) must be equipped with Tier 4 Final engines.

4.3 Operation

An AQIA and HRA for the proposed Project were prepared to evaluate criteria pollutant level and health risk impacts due to operational emissions. The equipment and operations that would contribute to the emissions of criteria pollutants and TACs from the combustion equipment, and thus be included in the AQIA/HRA, are:

- The thermal oxidizer unit that uses tail gas from the landfill and natural gas as the supplemental fuel;
- The off-spec flare pilot that uses natural gas; and
- The generator set ICE that uses natural gas.

Criteria pollutant and TAC emissions from operational activity for each of the sources are shown in Tables 4-7 to 4-9 and Table 4-10, respectively. Emission calculation methodology is shown in Appendix D.

Table 4-7: Criteria Pollutant Emissions from Operations – Thermal Oxidizer Unit

Pollutant	1-Hour Averaging Period (lb/hr)	8-Hour Averaging Period (lb/8-hr)	24-Hour Averaging Period (lb/24-hr)	Annual Averaging Period (lb/yr)
NO_2	1.053E+00	--	--	9.22E+03
SO_2	5.177E+00	--	1.243E+02	3.20E+04
CO	2.406E+00	1.925E+01	--	--
PM_{10}	--	--	5.156E+00	1.88E+03
$PM_{2.5}$	--	--	5.156E+00	1.88E+03

Table 4-8: Criteria Pollutant Emissions from Operations – Off-Spec Flare

Pollutant	1-Hour Averaging Period (lb/hr)	8-Hour Averaging Period (lb/8-hr)	24-Hour Averaging Period (lb/24-hr)	Annual Averaging Period (lb/yr)
NO_2	6.000E-03	--	--	5.256E+01
SO_2	5.714E-05	--	1.371E-03	5.006E-01
CO	6.000E-03	4.800E-02	--	--
PM_{10}	--	--	1.394E-02	5.089E+00
$PM_{2.5}$	--	--	1.394E-02	5.089E+00

Table 4-9: Criteria Pollutant Emissions from Operations – Generator Set with ICE

Pollutant	1-Hour Averaging Period (lb/hr)	8-Hour Averaging Period (lb/8-hr)	24-Hour Averaging Period (lb/24-hr)	Annual Averaging Period (lb/yr)
NO_2	1.672E-01	–	–	3.344E+01
SO_2	9.929E-04	–	2.383E-02	1.986E-01
CO	2.786E-01	2.229E+00	--	--
PM_{10}	–	–	3.972E-01	3.310E+00
$PM_{2.5}$	–	–	3.972E-01	3.310E+00

Table 4-10: TAC Emissions from Operations

Pollutant	CAS No.	Thermal Oxidizer Unit		Off-Spec Flare		Generator Set with ICE	
		Annual Emissions (lb/year)	Maximum Hourly Emissions (lb/hr)	Annual Emissions (lb/year)	Maximum Hourly Emissions (lb/hr)	Annual Emissions (lb/year)	Maximum Hourly Emissions (lb/hr)
1,3-Butadiene	106990	–	–	–	–	2.24E-01	1.12E-03
1,1-Dichloroethene	75354	2.13E-01	2.44E-05	–	–	–	–
1,1-Dichloroethane	75343	1.94E-01	2.21E-05	–	–	–	–
1,2-Dichloroethane	107062	2.31E+00	2.64E-04	–	–	3.81E-03	1.90E-05
1,1,1-Trichloroethane	71556	1.45E-01	1.65E-05	–	–	–	–
1,1,2-Trichloroethane	79005	–	–	–	–	5.16E-03	2.58E-05
1,1,2,2-Tetrachloroethane	79345	–	–	–	–	8.54E-03	4.27E-05
Acetaldehyde	75070	7.79E-01	8.89E-05	3.59E-02	4.10E-06	9.43E-01	4.72E-03
Acrolein	107028	6.78E-01	7.74E-05	8.34E-03	9.52E-07	8.87E-01	4.44E-03
Ammonia	7664417	8.04E+02	9.18E-02	–	–	1.06E+00	5.30E-03
Benzene	71432	1.99E+01	2.27E-03	1.33E-01	1.51E-05	5.33E-01	2.66E-03
Carbon Tetrachloride	56235	–	–	–	–	5.99E-03	3.00E-05
Chlorobenzene	108907	5.83E+01	6.65E-03	–	–	–	–
Chloroform	67663	6.13E-02	7.00E-06	–	–	4.63E-03	2.32E-05
Chrysene	218019	–	–	–	–	–	–
Ethyl Benzene	100414	1.73E+00	1.98E-04	1.20E+00	1.38E-04	8.37E-03	4.19E-05

Pollutant	CAS No.	Thermal Oxidizer Unit		Off-Spec Flare		Generator Set with ICE	
		Annual Emissions (lb/year)	Maximum Hourly Emissions (lb/hr)	Annual Emissions (lb/year)	Maximum Hourly Emissions (lb/hr)	Annual Emissions (lb/year)	Maximum Hourly Emissions (lb/hr)
Ethylene Dibromide	106934	–	–	–	–	7.18E-03	3.59E-05
Formaldehyde	50000	3.09E+00	3.53E-04	9.75E-01	1.11E-04	6.92E+00	3.46E-02
Hexane	110543	1.16E+00	1.32E-04	2.42E-02	2.76E-06	–	–
Methylene Chloride	75092	6.56E+00	7.49E-04	–	–	1.39E-02	6.95E-05
Methanol	67561	–	–	–	–	1.03E+00	5.16E-03
Naphthalene	91203	7.54E-02	8.60E-06	9.18E-03	1.05E-06	3.28E-02	1.64E-04
PAH	1151	2.51E-02	2.87E-06	2.50E-03	2.86E-07	–	–
Styrene	100425	–	–	–	–	4.00E-03	2.00E-05
Tetrachloroethene	127184	7.14E+00	8.16E-04	–	–	–	–
Toluene	108883	8.30E+01	9.47E-03	4.84E-02	5.52E-06	1.88E-01	9.42E-04
Trichloroethylene	79016	1.75E+00	1.99E-04	–	–	–	–
Vinyl Chloride	75014	1.09E+00	1.24E-04	–	–	2.42E-03	1.21E-05
Xylenes	1330207	6.45E+01	7.36E-03	2.42E-02	2.76E-06	6.59E-02	3.29E-04

4.3.1 Air Quality Impact Analysis

CEQA requires that the environmental impacts of a proposed project be identified and assessed. If these impacts are found to be significant, the impacts must be mitigated to the extent feasible.

The SCAQMD has developed CEQA thresholds for determination of significance and determination if AQIA modeling is required (SCAQMD 2023). Based on the size of the Project, modeling is required to demonstrate compliance with the NAAQS and CAAQS for five primary criteria pollutants, i.e., NO_2, CO, sulfur dioxide (SO_2), PM_{10}, and $PM_{2.5}$.

The purpose of the AQIA is to evaluate whether or not criteria pollutant emissions resulting from the proposed Project would cause or contribute significantly to a violation of the CAAQS or NAAQS. AERMOD was used to simulate the atmospheric transport and dispersion of airborne pollutants and to quantify the maximum expected GLCs from Project emissions. The air quality modeling methodology described in this section is based on SCAQMD policies and "South Coast AQMD Modeling Guidance for AERMOD" (SCAQMD 2024).

Each pollutant is modeled separately using maximum emission rates for the appropriate averaging time. The modeled concentration is combined with a conservative background concentration for comparison to the CAAQS/NAAQS. If the Project plus background concentration is less than the CAAQS/NAAQS, then Project emissions would have a less than significant impact. This technique was used to assess the impacts of the proposed Project's NO_x, CO, and SO_2 emissions.

Per CEQA threshold guidance (SCAQMD 2023), for PM_{10} and $PM_{2.5}$, the maximum modeled concentration is compared to the corresponding significant change threshold, see Table 4-12. If the Project concentration is less than the significant change threshold, then Project emissions would not contribute significantly to a violation of the CAAQS or NAAQS.

NO_2 modeling for the 1-hour and annual CAAQS/NAAQS followed the U.S. EPA Tier 1 technique outlined in the U.S. EPA NO_2 clarification memo (EPA 2024), which conservatively assumes that all NO_x converts to NO_2.

4.3.1.1 Background Air Quality

Dispersion modeling to evaluate compliance with air quality standards requires the use of measured air pollutant concentrations to account for the background contributions of regional emissions, i.e., emissions sources not explicitly included in the model simulations.

Table 4-11 presents the maximum observed ambient background data for each pollutant and averaging time at the nearest representative monitoring station for the most recent data available. The nearest monitoring sites with available data (Central Orange County and Downtown Los Angeles) are located in an area that likely has higher ambient pollutant concentrations than the proposed Project site. The tabulated values were used to represent background levels for the indicated pollutants and averaging times in the AQIA to evaluate compliance with the CAAQS or NAAQS. The monitoring data indicate that air quality in the Project area complies with all NAAQS and CAAQS for NO_2, CO, and SO_2. However, the CAAQS and NAAQS are periodically exceeded in the Project area for $PM_{2.5}$ and PM_{10}.

Table 4-11: AQIA Background Concentrations

Pollutant	Averaging Time	Standard	Monitoring Station	Ambient Background Data (concentration units)				AAQS (concentration units)	Exceeds Standard?	Background Concentration Notes
				2021	2022	2023	Summary			
NO_2 (Concentration Units = ppb)	1-Hour	California	SCAQMD; Central Orange County	67.1	53	50.9	67.1	180	No	Highest of most recent 3 years.
	Annual	Federal	SCAQMD; Central Orange County	12.4	11.8	10.5	12.4	53	No	Highest of most recent 3 years.
		California	SCAQMD; Central Orange County	12.4	11.8	10.5	12.4	30	No	Highest of most recent 3 years.
CO (Concentration Units = ppm)	1-Hour	Federal	SCAQMD; Central Orange County	2.1	2.4	2.5	2.5	35	No	Highest of most recent 3 years.
		California	SCAQMD; Central Orange County	2.1	2.4	2.5	2.5	20	No	Highest of most recent 3 years.
	8-Hour	Federal	SCAQMD; Central Orange County	1.5	1.4	1.6	1.6	9	No	Highest of most recent 3 years.
		California	SCAQMD; Central Orange County	1.5	1.4	1.6	1.6	9	No	Highest of most recent 3 years.

Pollutant	Averaging Time	Standard	Monitoring Station	Ambient Background Data (concentration units)				AAQS (concentration units)	Exceeds Standard?	Background Concentration Notes
				2021	2022	2023	Summary			
SO_2 (Concentration Units = ppb)	1-Hour	Federal	EPA; Main St, Los Angeles	2	2	2	2	75	No	The design value (=3-year average of 99th percentile of 1-hour daily max).
		California	EPA; Main St, Los Angeles	2.2	6.5	7.7	7.7	250	No	Highest of most recent 3 years.
	24-Hour	California	EPA; Main St, Los Angeles	1.2	1.2	2.3	2.3	40	No	Highest of most recent 3 years.
PM_{10} (Concentration Units = $\mu g/m^3$)	24-Hour	Federal	SCAQMD; Central Orange County	115	90	146	146	150	No	Highest of most recent 3 years.
		California	SCAQMD; Central Orange County	115	90	146	146	50	Yes	Highest of most recent 3 years.
	Annual	California	SCAQMD; Central Orange County	22.9	22.3	24	24	20	Yes	Highest of most recent 3 years.
$PM_{2.5}$ (Concentration Units = $\mu g/m^3$)	24-Hour	Federal	SCAQMD; Central Orange County	36.70	22.10	22.00	26.93	35	No	The design value (=3-year average of 98th percentile of 24-hour daily max).
	Annual	Federal	SCAQMD; Central Orange County	11.4	9.87	9.07	11.4	9	Yes	Highest of most recent 3 years.
		California	SCAQMD; Central Orange County	11.4	9.87	9.07	11.4	12	No	Highest of most recent 3 years.

4.3.1.2 Analysis Scenario and Emission Rates

The criteria pollutant modeling was conducted using the respective emission rate for each averaging times (1-hour, 8-hour, 24-hour, and annual), depending on the pollutant (e.g., 1-hour emission rate for 1-hour averaging period). Calculated emissions for each pollutant's averaging periods are shown in Tables 4-7 to 4-9, outlined in Appendix D, and contained in the electronic modeling files.

4.3.1.3 AQIA Results

Table 4-12 presents the maximum model-predicted concentrations from the proposed Project emissions, maximum background concentrations, and the sum of these concentrations in comparison to the NO_2, SO_2, CO, PM_{10}, and $PM_{2.5}$ CEQA thresholds. The AQIA modeling results presented in Table 4-12 demonstrate that the Project would not cause an exceedance of the NO_2, SO_2, or CO NAAQS or CAAQS.

Table 4-12 also shows that the model-predicted PM_{10} and $PM_{2.5}$ concentrations from the operational sources would not exceed the 24-hour and annual significant change thresholds. Thus, the proposed Project would not cause a violation of the NAAQS or CAAQS or contribute substantially to an existing air quality violation, and therefore, the proposed Project would have a less than significant impact on air quality.

Table 4-12: AQIA Modeling Results for Project Operations

Pollutant	Averaging Time	Federal or State Standard	Modeled Concentration (Concentration Units)	Background Concentration (Concentration Units)	Modeled + Background Concentration (Concentration Units)	CEQA Threshold (Concentration Units)	Significant?
NO_2 (Concentration Units = ppb)	1-Hour[F]	California[1]	16.591	67.1	83.7	180	**No**
	Annual[E]	Federal	0.184	12.4	12.6	53	**No**
		California	0.184	12.4	12.6	30	**No**
CO (Concentration Units = ppm)	1-Hour[F]	Federal	0.045	2.5	2.5	35	**No**
		California	0.045	2.5	2.5	20	**No**
	8-Hour[F]	Federal	0.026	1.6	1.6	9	**No**
		California	0.026	1.6	1.6	9	**No**
SO_2 (Concentration Units = ppb)	1-Hour[E]	Federal	30.37	2	32.4	75	**No**
		California	40.89	7.7	48.6	250	**No**
	24-Hour[E]	California	5.157	2.3	7.5	40	**No**
PM_{10} (Concentration Units = $\mu g/m^3$)	24-Hour[F]	SCAQMD CEQA Significant Change Threshold	0.913	–	–	2.5	**No**
	Annual[E]		0.071	–	–	1	
$PM_{2.5}$ (Concentration Units = $\mu g/m^3$)	24-Hour[F]		0.913	–	–	2.5	

Notes:

1. The modeled concentration presented is the model predicted maximum hourly value using full NO2 conversion.
2. "E" indicates modeled concentration was higher in Elevated Terrain modeling run and is presented here.
3. "F" indicates modeled concentration was higher in Flat Terrain modeling run and is presented here.

4.3.2 Operations – Health Risk Assessment

4.3.2.1 Mobile Sources

The proposed Project would add four additional employees and five to ten truck trips per year for maintenance purposes. The CalEEMod default distances of 18.44 miles, 13.4 miles, and 7.9 miles were used for the home to work (H-W), work to other locations (W-O), and other to other location (O-O) trips, respectively. As shown in Section 2.5 of the CalEEMod output file (page 15 of 104 of Appendix A), the daily DPM emissions due to operational mobile sources would be less than 0.005 lb/day (approximately 1.9 lb/yr) dispersed over the total daily vehicle miles traveled (VMT). A Tier 2 HRA was conducted using the SCAQMD Rule 1401 health risk assessment tool and annual DPM emission rate of 1.9 lb/yr indicates cancer health risks values of 0.4 in a million for worker receptors and below 0.1 for residential receptors compared to the CEQA threshold for cancer risk being 10 in a million (SCAQMD 2023), therefore these health risk impacts are considered de minimis. The output of the Tier 2 HRA is shown in Appendix F-1. Therefore, impacts would be less than significant.

4.3.2.2 Stationary Sources

An HRA for the proposed Project was prepared to evaluate health risk impacts due to operational TAC emissions. The equipment and operations that would contribute to the emissions of TACs/hazardous air pollutants (HAPs) from the combustion equipment, and thus were included in this HRA, are:

- The thermal oxidizer unit that uses tail gas from the landfill and natural gas as the supplemental fuel;
- The off-spec flare pilot that uses natural gas; and
- The generator set ICE that uses natural gas.

The SCAQMD has defined CEQA health risk thresholds for long-term and short-term health impacts. All three combustion units emit TACs that potentially have the following health impacts to residential, sensitive, and worker receptors: long-term cancer risk, chronic (long-term) health hazard (HIC) to various human organs and systems, and acute (short-term) health hazards (HIA). The SCAQMD CEQA thresholds of significance for these health risks are as follows:

- Cancer risk greater than or equal to 10 in one million;
- HIC greater than or equal to 1.0; and
- HIA greater than or equal to 1.0.
- Cancer Burden >0.5 excess cancer cases (in areas ≥1 in one million)

The TAC emissions from the thermal oxidizer unit, off-spec flare, and generator set with ICE operational sources are shown in Table 4-10 and in Appendix D. The thermal oxidizer unit and off-spec flare are assumed to operate continuously. The generator set with ICE emissions were calculated based on the maximum permitted usage (24 hours per day, 200 hours per year).

4.3.2.2.1 Health Risk Assessment Calculations

This HRA was conducted in accordance with SCAQMD Risk Assessment Procedures (SCAQMD 2024) and the OEHHA Air Toxics Hot Spots Program Guidance Manual (OEHHA 2015).

The construction HRA health risk calculations were performed using the HARP2 ADMRT, version 22118 (CARB 2022b). The X/Q 1-hour and annual values that were determined for each source using AERMOD were imported into HARP2 and used in conjunction with hourly and annual emissions to determine the GLC of each TAC to an individual. The GLCs were then used to estimate the long-term cancer, chronic, and acute health risks to an individual.

Table 4-13 provides a listing of the HARP2 options that were selected for the analysis.

4.3.2.2.2 Cancer Risk

Cancer risk is the estimated probability of a maximally exposed individual potentially contracting cancer as a result of exposure to TACs over an extended period of time. This HRA estimated cancer risk over a 30-year period for residential receptor locations and 25 years for off-site worker receptor locations.

Residential receptor cancer risk estimates were calculated using CARB's "RMP Using the Derived Method," and off-site workplace cancer risk estimates used the "OEHHA Derived" calculation method. The RMP uses high-end breathing rates (95^{th} percentile) for children from the third trimester through age 2 and 80^{th} percentile breathing rates for all other ages for residential exposures (CARB/CAPCOA 2015). The "OEHHA Derived" method uses high-end exposure parameters for the top two exposure pathways and mean exposure parameters for the remaining pathways for cancer risk estimates. The "RMP Using the Derived Method" combines the two approaches.

4.3.2.2.3 Chronic Hazard Index

The emitted TACs also have non-cancer health risks due to long-term (chronic) exposure. The HIC is the sum of the individual substance HICs for all TACs affecting the same target organ system. Chronic risk was calculated using the "OEHHA Derived" Method at all receptors for an annual exposure duration. The same exposure pathways, as outlined in Table 4-13, were used in the HIC assessment.

4.3.2.2.4 Acute Hazard Risk

Some TACs may have non-cancer health risk due to short-term (acute) exposures. The HIA is the sum of the individual substance HIAs for all TACs affecting the same target organ system. Acute risk was calculated at all receptors for an exposure duration of 1 hour.

Acute impacts for start-up of the thermal oxidizer or the flare during upset conditions would be limited to the maximum gas rate to the RNG plant. As such, any operating condition in which both thermal oxidizer and the flare are concurrently used would be at a reduced rate that would not equal more than the maximum for either unit. Therefore, acute impacts during start-up conditions were not evaluated. Moreover, since both the thermal oxidizer and flare are modeled as point sources, have similar stack parameters (same height and similar exit velocity within 1 m/s), and are located within 36 feet of each other. Since the dispersion characteristics between the thermal oxidizer and flare are similar, during startup and upset conditions impacts are also expected to be similar – modeled as a flare or as a thermal oxidizer.

Table 4-13: Operational HRA – HARP2 Model Options

Parameter	Assumptions				Comments
Multi-Pathway					
Inhalation	Res	☒	Work	☒	–
Soil	Res	☒	Work	☒	–
Dermal	Res	☒	Work	☒	"Warm" climate
Mother's Milk	Res	☒	Work	☐	–
Drinking Water	Res	☐	Work	☐	–
Fish	Res	☐	Work	☐	–
Homegrown Produce	Res	☒	Work	☐	Default for "Households that Garden"
Beef/Dairy	Res	☐	Work	☐	–
Pigs, Chickens, and/or Eggs	Res	☐	Work	☐	
Deposition Velocity	0.02 m/s				
Residential Cancer Risk Assumptions					
Exposure Duration	30 year				–
Fraction of Time at Home	3rd Trimester to 16 years: On 16 years to 30 years: On				Maximum residential cancer risk is less than 1 in a million; therefore, one in a million isopleth does not exist.
Analysis Option	RMP Using the Derived Method				–
Worker Cancer Risk Assumptions					
Exposure Duration	25 year				–
Analysis Option	OEHHA Derived Method				–
Inhalation Rate Basis	8-hour breathing rates, moderate intensity				–
Worker Adjustment Factor	1				–
Residential and Worker Non-Cancer Risk Assumptions					
Analysis Option	OEHHA Derived Method				–
Inhalation Rate Basis	Long-term 24-hour (resident) Moderate 8-hour (worker)				–
Worker Adjustment Factor	1				–

4.3.2.2.5 Operational HRA Results

The operational HRA results predict that all health risk factors would be less than the CEQA significance thresholds at all actual receptors. The results of the HRA are summarized in Tables 4-14 through 4-16.

Cancer and non-cancer chronic health impacts for off-site worker receptors were evaluated at office building locations on the landfill, as these are the only areas where an employee would be consistently located for an extended period of time. Acute health risk impacts for off-site worker receptors were evaluated at any receptor location across the working part of the landfill, regardless of the presence of a structure.

The MEIR and MEIW were predicted to be the same for cancer and chronic health risk indices. The MEIR was predicted to be southwest of the project site within the Portola Springs community, and the MEIW was predicted to be located at one of the administrative buildings on the landfill utilized by OCWR staff. The acute risk MEIR was also predicted to be at the southwest of the project site within the Portola Springs community. The acute risk MEIW was located at one of the covered areas on the landfill, adjacent to the RNG facility. Figure 4-5 shows the locations of the MEIR and MEIW receptors.

Figure 4-5: Operational HRA MEIR and MEIW Receptor Locations

Green Square:	MEIR for Cancer and Chronic Health Risks.
Blue Square:	MEIW for Cancer and Chronic Risk.
Yellow Triangle:	MEIR for Acute Health Risk.
Orange Triangle:	MEIW for Acute Health Risk.

Cancer Risk

The HRA predicted that the cancer risk at all receptor types would be below 10 in one million, which is below the CEQA threshold. Figure 4-5 shows the locations of the MEIR and MEIW receptors. As the cancer risk was below 1 in one million, no isopleth was created. Table 4-14 presents the 30-year cancer risk at the MEIR and the 25-year cancer risk at the MEIW, plus the coordinates of each receptor. Sensitive receptors[3] were evaluated as part of the receptor grid and have impacts below the maximum impact identified at the MEIR or MEIW, with the closest sensitive receptors located at Crean Lutheran High School and Stonegate Elementary School.

Table 4-14: Cancer Risk Results

Receptor	Exposure Duration	UTM Easting (m)	UTM Northing (m)	Cancer Risk (in one million)	CEQA Threshold[2]
MEIR[1]	30-Year	433,238	3,730,039	0.0090	10 in one million
MEIW[1]	25-Year	434,246	3,731,163	0.0027	

1. Maximum Risk from flat terrain AERMOD run.
2. Source: SCAQMD 2023.

Chronic Hazard Index

The HIC at all receptor types due to operational emissions was predicted to be well below the CEQA threshold of 1.0. Figure 4-5 shows the locations of the MEIR and MEIW receptors. Table 4-15 presents the HIC at the MEIR and the annual and 8-hour HIC at the MEIW, plus the coordinates of each receptor. Sensitive receptors[4] were evaluated as part of the receptor grid and have impacts below the maximum impact identified at the MEIR or MEIW, with the closest sensitive receptors located at Crean Lutheran High School and Stonegate Elementary School.

Table 4-15: Chronic Hazard Index Results

Receptor	Exposure Duration	UTM Easting (m)	UTM Northing (m)	HIC	CEQA Threshold[2]
MEIR[1]	Annual	433,238	3,730,039	0.0001	1.0
MEIW[1]		434,246	3,731,163	0.0003	
MEIW[1]	8-hour	434,246	3,731,163	0.0002	

1. Maximum Risk from flat terrain AERMOD run.
2. Source: SCAQMD 2023.
3. The HIC at the MEIW was estimated on an annual and 8-hour basis.

Acute Hazard Index

The HIA at all actual receptors due to Project emissions was predicted to be below the CEQA threshold of 1.0. Figure 4-5 shows the locations of the MEIR and MEIW receptors. As the HIA was below 0.5, no isopleth was created. Table 4-16 presents the HIA at the MEIR and MEIW receptors, plus the coordinates of each receptor. The MEIR was predicted to be at the southwest of the project site within the Portola Springs community. The MEIW was predicted to be at one of the covered areas on the landfill, adjacent to the RNG facility. Sensitive receptors[3] were evaluated as part of the receptor grid and have impacts below the maximum impact identified at the MEIR or MEIW, with the closest sensitive receptors located at Crean Lutheran High School and Stonegate Elementary School.

[3] For the purposes of a CEQA analysis, the SCAQMD considers a sensitive receptor to be to be a receptor such as residence, hospital, convalescent facility where it is possible that an individual could remain for 24 hours.

Table 4-16: Acute Hazard Index Results

Receptor	Exposure Duration	UTM Easting (m)	UTM Northing (m)	HIA	CEQA Threshold[2]
MEIR[1]	1-Hour	433,275	3,729,974	0.0165	1.0
MEIW[1]		434,185	3,731,019	0.3574	

1. Maximum Risk from flat terrain AERMOD run.
2. Source: SCAQMD 2023.

All health risk values were predicted to be less than the CEQA significance thresholds and show that for all receptor types, i.e., MEIR and MEIW, the predicted health risks would be well below the CEQA cancer, non-cancer chronic, and acute health risk thresholds. Since the cancer risk would be less than 1 in one million for any real receptor, there is no excess cancer burden to evaluate.

5.0 ANALYSIS OF AIR QUALITY SIGNIFICANCE CRITERIA

Estimated construction and operational impacts were evaluated based on the emissions presented in this report and compared against quantitative criteria established by the SCAQMD. These criteria are relied upon to make significance determinations based on mass emissions of criteria pollutants. As shown above, the proposed Project would result in a less than significant impact related to regional and localized emissions, which would not be cumulatively considerable. Further, the proposed Project would not conflict with SCAQMD planning goals or be a source of objectionable odors. Moreover, the proposed Project would not cause substantial air pollutant concentrations with implementation of the proposed mitigation measure (MM-AQ-1).

5.1 Environmental Determination

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less Than Significant Impact. The Project site is located in the South Coast Air Basin, comprising all of Orange County and the non-desert regions of Los Angeles, Riverside, and San Bernardino Counties. The SCAQMD is the agency primarily responsible for comprehensive air pollution control in the South Coast Air Basin and reducing emissions from area and point stationary, mobile, and indirect sources. The SCAQMD prepared the 2022 Air Quality Management Plan (AQMP) to meet federal and State ambient air quality standards. The 2022 AQMP contains a comprehensive list of pollution control strategies directed at reducing emissions and achieving ambient air quality standards. These strategies are developed, in part, based on regional population, housing, and employment projections prepared by the Southern California Association of Governments (SCAG). SCAG is the regional planning agency for Los Angeles, Orange, Ventura, Riverside, San Bernardino, and Imperial Counties and addresses regional issues relating to transportation, the economy, community development, and the environment. With regard to future growth, SCAG has prepared the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (2020-2045 RTP/SCS), which provides population, housing, and employment projections for cities under its jurisdiction. These growth projections are based in part on projections originating under County and City General Plans. These growth projections were utilized in the preparation of the air quality forecasts and consistency analysis included in the 2022 AQMP. The 2020-2045 RTP/SCS was approved in September 2020.

The 2022 AQMP was adopted by the SCAQMD Governing Board on December 2, 2022, as a program to lead the South Coast Air Basin into compliance with several criteria pollutant standards and other federal requirements. It relies on emissions forecasts based on demographic and economic growth projections provided by SCAG's 2020-2045 RTP/SCS. SCAG is charged by California law to prepare and approve "the portions of each AQMP relating to demographic projections and integrated regional land use, housing, employment, and transportation programs, measures and strategies." Projects whose growth is included in the projections used in the formulation of the AQMP are considered to be consistent with the plan and not to interfere with its attainment. The SCAQMD recommends that, when determining whether a project is consistent with the current AQMP, a lead agency must assess whether the project would directly obstruct implementation of the plan and whether it is consistent with the demographic and economic assumptions (typically land use-related, such as resultant employment or residential units) upon which the plan is based (SCAQMD 2022).

A significant air quality impact may occur if a project is inconsistent with the AQMP or would in some way represent a substantial hindrance to employing the policies or obtaining the goals of that plan. As shown above, the construction emissions and the incremental emissions from the operations of the proposed Project do not exceed the SCAQMD's established thresholds of potential significance for air quality impacts. The proposed Project would provide a beneficial use for the LFG generated at the landfill and would be consistent with the goals and objectives of the AQMP. Therefore, the Project would not increase the frequency or severity of an air quality standards violation or cause a new violation. Furthermore, the Project is consistent with the land use and zoning designation through development of the proposed Project. Because the Project would be consistent with the City's General Plan, it is also consistent with the regional growth projections adopted in the 2022 AQMP. Air quality emissions generated by the proposed Project are considered to be evaluated in the AQMP, and Project development in accordance with the City's General Plan would not conflict with or obstruct implementation of the regional 2022 AQMP. Thus, the proposed Project is not expected to conflict with or obstruct the implementation of the AQMP and SCAQMD rules. Therefore, impacts would be less than significant.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less Than Significant Impact. To evaluate impacts, quantitative significance criteria established by the local air quality agency, such as the SCAQMD, may be relied upon to make significance determinations based on mass emissions of criteria pollutants.

A significant impact would occur if the proposed Project would violate any air quality standard or contribute substantially to an existing or projected air quality violation. Project construction emissions were estimated using CalEEMod, the statewide land use emissions computer model designed to quantify potential criteria pollutant and GHG emissions associated with both construction and operations from land use projects. As shown in Tables 3-6, the Project is estimated to generate less than the SCAQMD threshold of 75 pounds per day ROG, 100 pounds per day NO_x, 550 pounds per day CO, 150 pounds per day oxides of sulfur (SO_x), 150 pounds per day PM_{10}, and 55 pounds per day $PM_{2.5}$ during the construction phase and no mitigation is needed.

The primary sources of operations phase emissions are the three stationary sources (i.e., thermal oxidizer, flare, and ICE), on-road vehicles traveling to and from the site buildings, and operational activities such as landscape equipment, consumer products, and energy use. As shown in Tables 3-7, the Project is estimated to generate less than the SCAQMD threshold of 55 pounds per day ROG, 55 pounds per day NO_x, 550 pounds per day CO, 150 pounds per day SO_x, 150 pounds per day PM_{10}, and 55 pounds per day $PM_{2.5}$ during the operational phase.

The proposed Project site is 4.24 acres in SRA Zone 19 – Saddleback Valley. As a conservative estimate, the 2-acre screening lookup tables were used to evaluate NO_x, CO, PM_{10}, and $PM_{2.5}$ impacts on nearby receptors. The nearest receptor is approximately 50 meters (165 feet) away from the proposed RNG facility. Therefore, the impact evaluation was performed using the closest distance within SCAQMD LST tables of 50 meters for construction. (SCAQMD 2008a). As shown in Table 3-8, on-site emissions from construction would meet the LST passing criteria at the nearest receptors (50 meters).

Additionally, the AQIA conducted shows that operational activities would not cause an exceedance of the NO_2, SO_2, or CO NAAQS or CAAQS. Furthermore, the model-predicted PM_{10} and $PM_{2.5}$ concentrations from the operational sources would not exceed the 24-hour and annual significant change thresholds (see Table 4-12). Thus, the proposed Project would not cause a violation of the NAAQS or CAAQS or contribute substantially to an existing air quality violation, and therefore, the proposed Project would have a less than significant impact.

SCAQMD Guidance

The SCAQMD's 2003 guidance on addressing cumulative impacts for air quality is as follows: "As Lead Agency, the SCAQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR [Environmental Impact Report]. […] Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant" (SCAQMD 2003).

CEQA Guidelines

As referenced above, the SCAQMD cumulative air quality significance thresholds are the same as the project-specific air quality significance thresholds. Because the criteria pollutant mass emissions impacts shown in Tables 3-3 through 3-6 would not be expected to exceed any of the SCAQMD air quality significance thresholds, cumulative air quality impacts from comparable development projects would also be expected to be less than significant. Therefore, potential adverse impacts from implementing the proposed Project would not be "cumulatively considerable" as defined by CEQA Guidelines Section 15064(h)(1) for air quality impacts. Per CEQA Guidelines Section 15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed Project's incremental effects would be cumulatively considerable.

As shown in Tables 3-6 through 3-8 and Table 4-12, the proposed Project would result in a less than significant impact for both localized and regional air pollution emissions and no mitigation is needed.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant with Mitigation Incorporated. A significant impact would occur if the proposed Project were to expose sensitive receptors to pollutant concentrations. The SCAQMD identifies the following as sensitive receptors: long-term health care facilities, rehabilitation centers, convalescent centers, retirement homes, residences, schools, playgrounds, childcare centers, and athletic facilities. There are residential land uses approximately 0.87 mile west of the Project site. The Project would be subject to grading and construction standards to mitigate air pollution and dust impacts. Construction equipment greater than 350 HP for the Trenching and Pipeline Construction phase (i.e., Phase 6) must be equipped with Tier 4 Final engines (MM-AQ-1). As demonstrated by the HRA results presented in Sections 4.2 and 4.3.2, the Project is not expected to substantially contribute to pollutant concentrations or expose surrounding residences and other sensitive receptors during construction or operation. The Project is required to meet SCAQMD Rule 403 requirements for controlling fugitive dust, as well as the City's requirements for grading and construction related to air pollution. Therefore, impacts would be less than significant with implementation of the proposed mitigation measure (MM-AQ-1).

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less Than Significant Impact. Potential sources that may emit odors during construction activities include equipment exhaust and architectural coatings. Odors from these sources would be localized and generally confined to the immediate area surrounding the Project site. The proposed Project would utilize typical construction techniques, and the odors would be typical of most construction sites and temporary in nature. Construction of the proposed Project would not cause an odor nuisance. The proposed RNG facility would not create odors because the LFG is being processed and compressed for shipment in the SoCalGas pipeline, and not released into the air. The byproducts of the treatment would be combusted at high temperatures just as it is currently being combusted in the existing flare station. The maintenance work on site also would not generate any significant odor. Therefore, the proposed Project would result in a less than significant impact related to objectionable odors, and no mitigation is required.

5.2 Mitigation Measures

MM-AQ-1: Construction equipment greater than 350 HP for the Trenching and Pipeline Construction phase (i.e., Phase 6) must be equipped with Tier 4 Final engines.

5.3 Cumulative Impacts

The FRB Landfill and Bowerman Power Plant will be operated concurrently with the proposed Project. Both facilities operate under SCAQMD permits and will not be affected as a result of the proposed Project. The SCAQMD's 2003 guidance on addressing cumulative impacts for air quality is as follows: "As Lead Agency, the SCAQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR [Environmental Impact Report]." Furthermore, "Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant" (SCAQMD 2003). As shown above, the predicted air quality impacts of the proposed Project are well below the applicable CEQA significance thresholds. Therefore, potential adverse impacts from implementing the proposed Project would not be "cumulatively considerable" as defined by state CEQA Guidelines Section 15064(h)(1) for air quality impacts. Per state CEQA Guidelines Section 15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed Project's incremental effects are cumulatively considerable. As such, Project related emissions would not result in significant cumulative impacts.

6.0 ANALYSIS OF GREENHOUSE GAS EMISSIONS SIGNIFICANCE CRITERIA

This technical report contains details of the interrelated air quality and GHG studies. As shown in Table 3-11, GHG emissions would be below the GHG significance threshold for industrial projects.

6.1 Environmental Determination

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less Than Significant Impact. Using CalEEMod, direct on-site and off-site GHG emissions were estimated for construction and operation, and indirect off-site GHG emissions were estimated to account for electric power used by the proposed Project, water conveyance, and solid waste disposal. In addition, stationary source emission calculations were performed for the RNG thermal oxidizer and the RNG flare, emergency generator usage, fugitive emissions, as well as product gas combustion.

The SCAQMD has officially adopted an industrial facility mass emissions threshold of 10,000 MT CO_2e per year (SCAQMD 2023).

Table 3-11 show the incremental GHG emissions and evaluate them against SCAQMD significance thresholds. Operational measures incorporate typical code-required energy and water conservation features. Off-site traffic impacts are included in these emissions estimates, along with construction emissions amortized over 30 years.

The proposed project would provide a beneficial use and as shown in Table 3-11, incremental GHG emissions would be below the proposed GHG significance threshold for land use projects. Additionally, the Project will contribute to California Public Utility Commission's Renewable Gas Program to procure RNG made by methane from organic waste from landfills and other sources, reduce the volume of LFG being flared, and help reduce greenhouse gas (GHG) emissions from the FRB Landfill. The annual CH_4 emissions avoided from 6,000 scfm of LFG is equivalent to 30,051.4 metric tons of CH_4 per year. Based on 2020 Bowerman Landfill GHG data, the 2020 disposable quantity of 1,998,625 metric tons of waste resulted in 14,179.32 metric tons of CH_4. Based on this ratio and the Bowerman Landfill permitted capacity of 8,000 tons per day or 2.9 million metric tons per year, the 6,000 scfm of LFG collected and sent into the SCE pipeline would reduce the equivalent amount of CH_4 from waste collected at the landfill for an approximately 1.5-year period.

Thus, impacts would be less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. The California legislature passed Senate Bill (SB) 375 to connect regional transportation planning to land use decisions made at a local level. SB 375 requires the metropolitan planning organizations (MPOs) to prepare a Sustainable Communities Strategy (SCS) in their RTPs to achieve the per capita GHG reduction targets. For the SCAG region, the SCS is contained in the 2024-2050 RTP/SCS. The 2024-2050 RTP/SCS focuses the majority of new housing and job growth in high-quality transit areas and other opportunity areas on existing main streets, downtowns, and commercial corridors, resulting in an improved jobs-housing balance and more opportunity for transit-oriented development (SCAG 2024). In addition, SB 743, adopted September 27, 2013, encourages land use and transportation planning decisions and investments that reduce vehicle miles traveled that contribute to GHG emissions, as required by AB 32. The proposed Project would not interfere with SCAG's ability to implement the regional strategies outlined in the 2024-2050 RTP/SCS. As such, impacts would be less than significant.

6.2 Mitigation Measures

None required.

6.3 Cumulative Impacts

As shown above, the predicted GHG impacts of the proposed Project are well below the SCAQMD threshold. These impacts characterize the incremental impacts of other comparable past, present, and reasonably foreseeable future development actions in the vicinity of the proposed project site per state CEQA Guidelines Section 15355(b). Because GHG mass emissions impacts of the proposed Project would not be expected to exceed the SCAQMD significance threshold, cumulative GHG impacts from related concurrent projects would also be expected to be less than significant. Therefore, potential adverse impacts from implementing the proposed Project would not be "cumulatively considerable" as defined by state CEQA Guidelines Section 15064(h)(1). Per state CEQA Guidelines Section 15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

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APPENDIX A – CALEEMOD OUTPUTS

Bowerman Power LFG, LLC (BP) - RNG Plant Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Bowerman Power LFG, LLC (BP) - RNG Plant
Construction Start Date	10/28/2025
Operational Year	2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.50
Precipitation (days)	4.20
Location	33.71669152511946, -117.70992361946648
County	Orange
City	—
Air District	South Coast AQMD
Air Basin	South Coast
TAZ	5930
EDFZ	7
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
General Office Building	2.67	1000sqft	0.06	2,670	0.00	—	—	—

General Heavy Industry	22.0	1000sqft	0.51	22,045	0.00	—	—	—
Other Asphalt Surfaces	23.2	1000sqft	0.53	0.00	0.00	—	—	—
User Defined Linear	2.40	Mile	0.00	0.00	0.00	—	—	—
Other Non-Asphalt Surfaces	137	1000sqft	3.14	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.41	26.6	37.9	0.06	1.06	15.6	16.7	0.97	2.41	3.39	—	8,480	8,480	0.29	0.21	9.02	8,558
Mit.	2.61	18.6	39.0	0.06	0.71	15.6	16.4	0.66	2.41	3.07	—	8,480	8,480	0.29	0.21	9.02	8,558
% Reduced	23%	30%	-3%	—	33%	—	2%	33%	—	9%	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	21.7	56.6	36.7	0.22	1.44	15.6	16.7	1.35	3.24	4.60	—	29,966	29,966	2.24	4.18	1.42	31,270
Mit.	20.9	56.6	37.8	0.22	1.44	15.6	16.4	1.35	3.24	4.60	—	29,966	29,966	2.24	4.18	1.42	31,270
% Reduced	4%	—	-3%	—	—	—	2%	—	—	—	—	—	—	—	—	—	—

Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.91	9.42	12.6	0.02	0.36	5.18	5.55	0.34	0.82	1.15	—	3,143	3,143	0.23	0.42	2.39	3,276
Mit.	1.65	6.80	13.0	0.02	0.25	5.18	5.43	0.23	0.82	1.05	—	3,143	3,143	0.23	0.42	2.39	3,276
% Reduced	14%	28%	-3%	—	31%	—	2%	31%	—	9%	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.35	1.72	2.30	< 0.005	0.07	0.95	1.01	0.06	0.15	0.21	—	520	520	0.04	0.07	0.40	542
Mit.	0.30	1.24	2.37	< 0.005	0.05	0.95	0.99	0.04	0.15	0.19	—	520	520	0.04	0.07	0.40	542
% Reduced	14%	28%	-3%	—	31%	—	2%	31%	—	9%	—	—	—	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

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

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	3.41	26.6	37.9	0.06	1.06	15.6	16.7	0.97	2.41	3.39	—	8,480	8,480	0.29	0.21	9.02	8,558
2027	1.83	15.4	20.2	0.03	0.62	14.0	14.6	0.57	2.02	2.59	—	4,086	4,086	0.15	0.08	2.34	4,115
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.69	56.6	36.1	0.22	1.44	9.50	10.9	1.35	3.24	4.60	—	29,966	29,966	2.24	4.18	1.42	31,270
2026	21.7	53.9	36.7	0.22	1.31	15.6	16.7	1.23	3.24	4.47	—	29,516	29,516	2.07	4.02	1.34	30,768
2027	3.07	25.1	33.8	0.06	0.97	15.0	15.9	0.90	2.25	3.15	—	7,593	7,593	0.28	0.16	0.15	7,649
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.46	6.55	4.46	0.02	0.18	1.09	1.27	0.17	0.40	0.57	—	3,143	3,143	0.23	0.42	2.39	3,276
2026	1.91	9.42	12.6	0.02	0.36	5.18	5.55	0.34	0.82	1.15	—	3,066	3,066	0.12	0.11	1.49	3,102

2027	0.43	3.46	4.72	0.01	0.14	2.88	3.01	0.13	0.42	0.55	—	990	990	0.04	0.02	0.33	997
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.08	1.20	0.81	< 0.005	0.03	0.20	0.23	0.03	0.07	0.10	—	520	520	0.04	0.07	0.40	542
2026	0.35	1.72	2.30	< 0.005	0.07	0.95	1.01	0.06	0.15	0.21	—	508	508	0.02	0.02	0.25	514
2027	0.08	0.63	0.86	< 0.005	0.03	0.53	0.55	0.02	0.08	0.10	—	164	164	0.01	< 0.005	0.06	165

2.3. Construction Emissions by Year, Mitigated

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

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	2.61	18.6	39.0	0.06	0.71	15.6	16.4	0.66	2.41	3.07	—	8,480	8,480	0.29	0.21	9.02	8,558
2027	1.06	7.80	21.4	0.03	0.29	14.0	14.3	0.27	2.02	2.29	—	4,086	4,086	0.15	0.08	2.34	4,115
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	3.69	56.6	36.1	0.22	1.44	9.50	10.9	1.35	3.24	4.60	—	29,966	29,966	2.24	4.18	1.42	31,270
2026	20.9	53.9	37.8	0.22	1.31	15.6	16.4	1.23	3.24	4.47	—	29,516	29,516	2.07	4.02	1.34	30,768
2027	2.30	17.5	35.1	0.06	0.64	15.0	15.6	0.59	2.25	2.84	—	7,593	7,593	0.28	0.16	0.15	7,649
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.46	6.55	4.46	0.02	0.18	1.09	1.27	0.17	0.40	0.57	—	3,143	3,143	0.23	0.42	2.39	3,276
2026	1.65	6.80	13.0	0.02	0.25	5.18	5.43	0.23	0.82	1.05	—	3,066	3,066	0.12	0.11	1.49	3,102
2027	0.27	1.93	4.97	0.01	0.07	2.88	2.95	0.07	0.42	0.49	—	990	990	0.04	0.02	0.33	997
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.08	1.20	0.81	< 0.005	0.03	0.20	0.23	0.03	0.07	0.10	—	520	520	0.04	0.07	0.40	542
2026	0.30	1.24	2.37	< 0.005	0.05	0.95	0.99	0.04	0.15	0.19	—	508	508	0.02	0.02	0.25	514
2027	0.05	0.35	0.91	< 0.005	0.01	0.53	0.54	0.01	0.08	0.09	—	164	164	0.01	< 0.005	0.06	165

2.4. Operations Emissions Compared Against Thresholds

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

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.84	29.8	66.2	124	5.59	0.10	5.69	5.59	0.02	5.62	26.7	870,698	870,724	86.0	0.97	6.16	873,168
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.66	29.8	65.1	124	5.59	0.10	5.69	5.59	0.02	5.62	26.7	870,689	870,716	86.0	0.97	5.76	873,160
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.13	25.9	59.3	87.8	5.20	0.10	5.29	5.20	0.02	5.22	26.7	870,653	870,680	85.9	0.96	5.92	873,121
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.94	4.72	10.8	16.0	0.95	0.02	0.97	0.95	< 0.005	0.95	4.43	144,147	144,151	14.2	0.16	0.98	144,555

2.5. Operations Emissions by Sector, Unmitigated

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

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.04	0.29	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	110	110	< 0.005	< 0.005	0.42	112
Area	0.79	0.01	1.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.42	4.42	< 0.005	< 0.005	—	4.44
Energy	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	702	702	0.05	< 0.005	—	704
Water	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Waste	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74

User-Def	5.01	29.4	64.6	124	5.57	—	5.57	5.57	—	5.57	—	869,826	869,826	83.2	0.93	—	872,184
Total	5.84	29.8	66.2	124	5.59	0.10	5.69	5.59	0.02	5.62	26.7	870,698	870,724	86.0	0.97	6.16	873,168
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.04	0.26	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	106	106	< 0.005	0.01	0.01	108
Area	0.62	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	702	702	0.05	< 0.005	—	704
Water	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Waste	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
User-Defined	5.01	29.4	64.6	124	5.57	—	5.57	5.57	—	5.57	—	869,826	869,826	83.2	0.93	—	872,184
Total	5.66	29.8	65.1	124	5.59	0.10	5.69	5.59	0.02	5.62	26.7	870,689	870,716	86.0	0.97	5.76	873,160
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.04	0.26	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	107	107	< 0.005	0.01	0.18	109
Area	0.74	0.01	0.74	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.03	3.03	< 0.005	< 0.005	—	3.04
Energy	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	702	702	0.05	< 0.005	—	704
Water	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Waste	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
User-Defined	4.36	25.6	58.1	87.8	5.17	—	5.17	5.17	—	5.17	—	869,786	869,786	83.2	0.93	—	872,142
Total	5.13	25.9	59.3	87.8	5.20	0.10	5.29	5.20	0.02	5.22	26.7	870,653	870,680	85.9	0.96	5.92	873,121
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	0.01	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	17.8	17.8	< 0.005	< 0.005	0.03	18.1
Area	0.13	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.50	0.50	< 0.005	< 0.005	—	0.50
Energy	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	116	116	0.01	< 0.005	—	117
Water	—	—	—	—	—	—	—	—	—	—	1.77	9.15	10.9	0.18	< 0.005	—	16.8

Waste	—	—	—	—	—	—	—	—	—	—	2.66	0.00	2.66	0.27	0.00	—	9.31
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.95	0.95
User-Defined	0.80	4.66	10.6	16.0	0.94	—	0.94	0.94	—	0.94	—	144,003	144,003	13.8	0.15	—	144,393
Total	0.94	4.72	10.8	16.0	0.95	0.02	0.97	0.95	< 0.005	0.95	4.43	144,147	144,151	14.2	0.16	0.98	144,555

2.6. Operations Emissions by Sector, Mitigated

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

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.04	0.29	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	110	110	< 0.005	< 0.005	0.42	112
Area	0.79	0.01	1.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.42	4.42	< 0.005	< 0.005	—	4.44
Energy	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	702	702	0.05	< 0.005	—	704
Water	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Waste	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
User-Defined	5.01	29.4	64.6	124	5.57	—	5.57	5.57	—	5.57	—	869,826	869,826	83.2	0.93	—	872,184
Total	5.84	29.8	66.2	124	5.59	0.10	5.69	5.59	0.02	5.62	26.7	870,698	870,724	86.0	0.97	6.16	873,168
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.04	0.26	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	106	106	< 0.005	0.01	0.01	108
Area	0.62	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	702	702	0.05	< 0.005	—	704
Water	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Waste	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74

User-Def	5.01	29.4	64.6	124	5.57	—	5.57	5.57	—	5.57	—	869,826	869,826	83.2	0.93	—	872,184
Total	5.66	29.8	65.1	124	5.59	0.10	5.69	5.59	0.02	5.62	26.7	870,689	870,716	86.0	0.97	5.76	873,160
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.02	0.04	0.26	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	107	107	< 0.005	0.01	0.18	109
Area	0.74	0.01	0.74	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.03	3.03	< 0.005	< 0.005	—	3.04
Energy	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	702	702	0.05	< 0.005	—	704
Water	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Waste	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
User-Defined	4.36	25.6	58.1	87.8	5.17	—	5.17	5.17	—	5.17	—	869,786	869,786	83.2	0.93	—	872,142
Total	5.13	25.9	59.3	87.8	5.20	0.10	5.29	5.20	0.02	5.22	26.7	870,653	870,680	85.9	0.96	5.92	873,121
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mobile	< 0.005	0.01	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	17.8	17.8	< 0.005	< 0.005	0.03	18.1
Area	0.13	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.50	0.50	< 0.005	< 0.005	—	0.50
Energy	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	116	116	0.01	< 0.005	—	117
Water	—	—	—	—	—	—	—	—	—	—	1.77	9.15	10.9	0.18	< 0.005	—	16.8
Waste	—	—	—	—	—	—	—	—	—	—	2.66	0.00	2.66	0.27	0.00	—	9.31
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.95	0.95
User-Defined	0.80	4.66	10.6	16.0	0.94	—	0.94	0.94	—	0.94	—	144,003	144,003	13.8	0.15	—	144,393
Total	0.94	4.72	10.8	16.0	0.95	0.02	0.97	0.95	< 0.005	0.95	4.43	144,147	144,151	14.2	0.16	0.98	144,555

3. Construction Emissions Details

3.1. Earthworks A (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314
Dust From Material Movement	—	—	—	—	—	5.11	5.11	—	2.63	2.63	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.87	0.83	< 0.005	0.04	—	0.04	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	0.14	0.14	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.16	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	253	253	< 0.005	0.01	0.03	256
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.02	7.02	< 0.005	< 0.005	0.01	7.11
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.16	1.16	< 0.005	< 0.005	< 0.005	1.18
Vendor	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
Hauling	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

3.2. Earthworks A (2025) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.31	31.6	30.2	0.05	1.37	—	1.37	1.26	—	1.26	—	5,295	5,295	0.21	0.04	—	5,314

Dust From Material Movement	—	—	—	—	—	5.11	5.11	—	2.63	2.63	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09	0.87	0.83	< 0.005	0.04	—	0.04	0.03	—	0.03	—	145	145	0.01	< 0.005	—	146
Dust From Material Movement	—	—	—	—	—	0.14	0.14	—	0.07	0.07	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.16	0.15	< 0.005	0.01	—	0.01	0.01	—	0.01	—	24.0	24.0	< 0.005	< 0.005	—	24.1
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	253	253	< 0.005	0.01	0.03	256
Vendor	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
Hauling	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	7.02	7.02	< 0.005	< 0.005	0.01	7.11
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.16	1.16	< 0.005	< 0.005	< 0.005	1.18
Vendor	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
Hauling	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

3.3. Earthworks B (2025) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.10	24.2	21.3	0.05	1.12	—	1.12	1.03	—	1.03	—	4,121	4,121	0.17	0.03	—	4,135
Dust From Material Movement	—	—	—	—	—	2.60	2.60	—	1.32	1.32	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	2.42	2.12	< 0.005	0.11	—	0.11	0.10	—	0.10	—	411	411	0.02	< 0.005	—	413

Dust From Material Movement	—	—	—	—	—	0.26	0.26	—	0.13	0.13	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.44	0.39	< 0.005	0.02	—	0.02	0.02	—	0.02	—	68.1	68.1	< 0.005	< 0.005	—	68.3
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	253	253	< 0.005	0.01	0.03	256
Vendor	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
Hauling	0.52	32.3	13.9	0.17	0.32	6.64	6.96	0.32	1.86	2.19	—	25,593	25,593	2.07	4.14	1.40	26,880
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	25.6	25.6	< 0.005	< 0.005	0.04	25.9
Vendor	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
Hauling	0.05	3.26	1.38	0.02	0.03	0.66	0.69	0.03	0.19	0.22	—	2,554	2,554	0.21	0.41	2.33	2,684
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.23	4.23	< 0.005	< 0.005	0.01	4.29
Vendor	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
Hauling	0.01	0.59	0.25	< 0.005	0.01	0.12	0.13	0.01	0.03	0.04	—	423	423	0.03	0.07	0.39	444

3.4. Earthworks B (2025) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.10	24.2	21.3	0.05	1.12	—	1.12	1.03	—	1.03	—	4,121	4,121	0.17	0.03	—	4,135
Dust From Material Movement	—	—	—	—	—	2.60	2.60	—	1.32	1.32	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	2.42	2.12	< 0.005	0.11	—	0.11	0.10	—	0.10	—	411	411	0.02	< 0.005	—	413
Dust From Material Movement	—	—	—	—	—	0.26	0.26	—	0.13	0.13	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.44	0.39	< 0.005	0.02	—	0.02	0.02	—	0.02	—	68.1	68.1	< 0.005	< 0.005	—	68.3
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—

Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	0.97	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	253	253	< 0.005	0.01	0.03	256
Vendor	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
Hauling	0.52	32.3	13.9	0.17	0.32	6.64	6.96	0.32	1.86	2.19	—	25,593	25,593	2.07	4.14	1.40	26,880
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	25.6	25.6	< 0.005	< 0.005	0.04	25.9
Vendor	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
Hauling	0.05	3.26	1.38	0.02	0.03	0.66	0.69	0.03	0.19	0.22	—	2,554	2,554	0.21	0.41	2.33	2,684
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	4.23	4.23	< 0.005	< 0.005	0.01	4.29
Vendor	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
Hauling	0.01	0.59	0.25	< 0.005	0.01	0.12	0.13	0.01	0.03	0.04	—	423	423	0.03	0.07	0.39	444

3.5. Earthworks B (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.93	22.7	21.1	0.05	0.98	—	0.98	0.90	—	0.90	—	4,120	4,120	0.17	0.03	—	4,134
Dust From Material Movement	—	—	—	—	—	2.60	2.60	—	1.32	1.32	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.22	0.21	< 0.005	0.01	—	0.01	0.01	—	0.01	—	40.3	40.3	< 0.005	< 0.005	—	40.5
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.04	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.67	6.67	< 0.005	< 0.005	—	6.70
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.91	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	248	248	< 0.005	0.01	0.02	251
Vendor	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

Hauling	0.36	31.1	13.4	0.17	0.32	6.64	6.96	0.32	1.86	2.19	—	25,148	25,148	1.90	3.98	1.32	26,383
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.46	2.46	< 0.005	< 0.005	< 0.005	2.49
Vendor	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
Hauling	< 0.005	0.31	0.13	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	246	246	0.02	0.04	0.21	258
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.41	0.41	< 0.005	< 0.005	< 0.005	0.41
Vendor	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
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.7	40.7	< 0.005	0.01	0.04	42.8

3.6. Earthworks B (2026) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.93	22.7	21.1	0.05	0.98	—	0.98	0.90	—	0.90	—	4,120	4,120	0.17	0.03	—	4,134
Dust From Material Movement	—	—	—	—	—	2.60	2.60	—	1.32	1.32	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.03	0.22	0.21	< 0.005	0.01	—	0.01	0.01	—	0.01	—	40.3	40.3	< 0.005	< 0.005	—	40.5
Dust From Material Movement	—	—	—	—	—	0.03	0.03	—	0.01	0.01	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.04	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.67	6.67	< 0.005	< 0.005	—	6.70
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.91	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	248	248	< 0.005	0.01	0.02	251
Vendor	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
Hauling	0.36	31.1	13.4	0.17	0.32	6.64	6.96	0.32	1.86	2.19	—	25,148	25,148	1.90	3.98	1.32	26,383
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	2.46	2.46	< 0.005	< 0.005	< 0.005	2.49
Vendor	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
Hauling	< 0.005	0.31	0.13	< 0.005	< 0.005	0.06	0.07	< 0.005	0.02	0.02	—	246	246	0.02	0.04	0.21	258
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.41	0.41	< 0.005	< 0.005	< 0.005	0.41

Vendor	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
Hauling	< 0.005	0.06	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	40.7	40.7	< 0.005	0.01	0.04	42.8

3.7. Building Construction A (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.67	10.9	0.02	0.38	—	0.38	0.35	—	0.35	—	2,435	2,435	0.10	0.02	—	2,444
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.67	10.9	0.02	0.38	—	0.38	0.35	—	0.35	—	2,435	2,435	0.10	0.02	—	2,444
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.25	3.67	0.01	0.13	—	0.13	0.12	—	0.12	—	820	820	0.03	0.01	—	823
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.59	0.67	< 0.005	0.02	—	0.02	0.02	—	0.02	—	136	136	0.01	< 0.005	—	136
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	1.05	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	260	260	< 0.005	0.01	0.91	264
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.33	133
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.91	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	248	248	< 0.005	0.01	0.02	251
Vendor	< 0.005	0.13	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.01	133
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.32	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	84.6	84.6	< 0.005	< 0.005	0.13	85.7
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	42.8	42.8	< 0.005	0.01	0.05	44.7
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	14.0	14.0	< 0.005	< 0.005	0.02	14.2
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.08	7.08	< 0.005	< 0.005	0.01	7.40
Hauling	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

3.8. Building Construction A (2026) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.67	10.9	0.02	0.38	—	0.38	0.35	—	0.35	—	2,435	2,435	0.10	0.02	—	2,444

Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.67	10.9	0.02	0.38	—	0.38	0.35	—	0.35	—	2,435	2,435	0.10	0.02	—	2,444
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.36	3.25	3.67	0.01	0.13	—	0.13	0.12	—	0.12	—	820	820	0.03	0.01	—	823
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.59	0.67	< 0.005	0.02	—	0.02	0.02	—	0.02	—	136	136	0.01	< 0.005	—	136
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.06	1.05	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	260	260	< 0.005	0.01	0.91	264
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.33	133
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.91	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	248	248	< 0.005	0.01	0.02	251
Vendor	< 0.005	0.13	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.01	133
Hauling	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.32	0.00	0.00	0.09	0.09	0.00	0.02	0.02	—	84.6	84.6	< 0.005	< 0.005	0.13	85.7
Vendor	< 0.005	0.05	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	42.8	42.8	< 0.005	0.01	0.05	44.7
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.06	0.00	0.00	0.02	0.02	0.00	< 0.005	< 0.005	—	14.0	14.0	< 0.005	< 0.005	0.02	14.2
Vendor	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.08	7.08	< 0.005	< 0.005	0.01	7.40
Hauling	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

3.9. Building Construction A (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.04	9.25	10.9	0.02	0.35	—	0.35	0.32	—	0.32	—	2,435	2,435	0.10	0.02	—	2,444
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.14	0.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	38.1	38.1	< 0.005	< 0.005	—	38.3
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.31	6.31	< 0.005	< 0.005	—	6.33
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.85	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	244	244	< 0.005	0.01	0.02	247
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.87	3.87	< 0.005	< 0.005	0.01	3.92
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.95	1.95	< 0.005	< 0.005	< 0.005	2.04
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.64	0.64	< 0.005	< 0.005	< 0.005	0.65
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Hauling	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

3.10. Building Construction A (2027) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.04	9.25	10.9	0.02	0.35	—	0.35	0.32	—	0.32	—	2,435	2,435	0.10	0.02	—	2,444
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.14	0.17	< 0.005	0.01	—	0.01	0.01	—	0.01	—	38.1	38.1	< 0.005	< 0.005	—	38.3
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.31	6.31	< 0.005	< 0.005	—	6.33
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.85	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	244	244	< 0.005	0.01	0.02	247
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.87	3.87	< 0.005	< 0.005	0.01	3.92
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.95	1.95	< 0.005	< 0.005	< 0.005	2.04
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.64	0.64	< 0.005	< 0.005	< 0.005	0.65
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.32	0.32	< 0.005	< 0.005	< 0.005	0.34
Hauling	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

3.11. Building Construction B (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	2.64	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	651	651	0.01	0.02	2.26	661
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.33	133
Hauling	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.17	2.27	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	620	620	0.01	0.02	0.06	627
Vendor	< 0.005	0.13	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.01	133
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.43	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	114	114	< 0.005	< 0.005	0.18	115
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.0	23.0	< 0.005	< 0.005	0.03	24.0
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	18.8	18.8	< 0.005	< 0.005	0.03	19.1
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.80	3.80	< 0.005	< 0.005	< 0.005	3.97
Hauling	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

3.12. Building Construction B (2026) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	2.64	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	651	651	0.01	0.02	2.26	661
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.33	133
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.17	2.27	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	620	620	0.01	0.02	0.06	627
Vendor	< 0.005	0.13	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.01	133
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.43	0.00	0.00	0.12	0.12	0.00	0.03	0.03	—	114	114	< 0.005	< 0.005	0.18	115
Vendor	< 0.005	0.02	0.01	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	23.0	23.0	< 0.005	< 0.005	0.03	24.0
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	18.8	18.8	< 0.005	< 0.005	0.03	19.1
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.80	3.80	< 0.005	< 0.005	< 0.005	3.97
Hauling	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

3.13. Building Construction C (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	2.64	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	651	651	0.01	0.02	2.26	661
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.33	133
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.17	2.27	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	620	620	0.01	0.02	0.06	627
Vendor	< 0.005	0.13	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.01	133
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.05	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	280	280	< 0.005	0.01	0.44	284

Vendor	< 0.005	0.06	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	56.7	56.7	< 0.005	0.01	0.06	59.2
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	46.4	46.4	< 0.005	< 0.005	0.07	47.0
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.39	9.39	< 0.005	< 0.005	0.01	9.80
Hauling	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

3.14. Building Construction C (2026) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.17	0.15	2.64	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	651	651	0.01	0.02	2.26	661
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.33	133
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.17	2.27	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	620	620	0.01	0.02	0.06	627
Vendor	< 0.005	0.13	0.07	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	127	127	0.01	0.02	0.01	133
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.05	0.00	0.00	0.29	0.29	0.00	0.07	0.07	—	280	280	< 0.005	0.01	0.44	284
Vendor	< 0.005	0.06	0.03	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	56.7	56.7	< 0.005	0.01	0.06	59.2
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	46.4	46.4	< 0.005	< 0.005	0.07	47.0
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	9.39	9.39	< 0.005	< 0.005	0.01	9.80
Hauling	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

3.15. Building Construction C (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.15	2.13	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	609	609	0.01	0.02	0.05	617
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.25	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	68.9	68.9	< 0.005	< 0.005	0.10	69.8
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.01	14.5
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.4	11.4	< 0.005	< 0.005	0.02	11.6
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.30	2.30	< 0.005	< 0.005	< 0.005	2.40
Hauling	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

3.16. Building Construction C (2027) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.15	2.13	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	609	609	0.01	0.02	0.05	617
Vendor	< 0.005	0.13	0.06	< 0.005	< 0.005	0.03	0.04	< 0.005	0.01	0.01	—	125	125	0.01	0.02	0.01	130
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.25	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	68.9	68.9	< 0.005	< 0.005	0.10	69.8
Vendor	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	13.9	13.9	< 0.005	< 0.005	0.01	14.5
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.4	11.4	< 0.005	< 0.005	0.02	11.6
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.30	2.30	< 0.005	< 0.005	< 0.005	2.40

Hauling	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

3.17. Paving (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	6.09	8.83	0.01	0.24	—	0.24	0.22	—	0.22	—	1,350	1,350	0.05	0.01	—	1,355
Paving	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.17	0.24	< 0.005	0.01	—	0.01	0.01	—	0.01	—	37.0	37.0	< 0.005	< 0.005	—	37.1
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.13	6.13	< 0.005	< 0.005	—	6.15
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.85	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	244	244	< 0.005	0.01	0.02	247
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.77	6.77	< 0.005	< 0.005	0.01	6.86
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.12	1.12	< 0.005	< 0.005	< 0.005	1.14
Vendor	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
Hauling	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

3.18. Paving (2027) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	6.09	8.83	0.01	0.24	—	0.24	0.22	—	0.22	—	1,350	1,350	0.05	0.01	—	1,355
Paving	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.17	0.24	< 0.005	0.01	—	0.01	0.01	—	0.01	—	37.0	37.0	< 0.005	< 0.005	—	37.1
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.03	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	6.13	6.13	< 0.005	< 0.005	—	6.15
Paving	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.85	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	244	244	< 0.005	0.01	0.02	247
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	6.77	6.77	< 0.005	< 0.005	0.01	6.86
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.12	1.12	< 0.005	< 0.005	< 0.005	1.14

Vendor	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
Hauling	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

3.19. Architectural Coating (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	18.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.49	5.49	< 0.005	< 0.005	—	5.51
Architectural Coatings	0.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.91	0.91	< 0.005	< 0.005	—	0.91

Architectural Coatings	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.91	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	248	248	< 0.005	0.01	0.02	251
Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.02	10.5
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.71	1.71	< 0.005	< 0.005	< 0.005	1.73
Vendor	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
Hauling	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

3.20. Architectural Coating (2026) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12	0.86	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	134	134	0.01	< 0.005	—	134
Architectural Coatings	18.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	5.49	5.49	< 0.005	< 0.005	—	5.51
Architectural Coatings	0.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.91	0.91	< 0.005	< 0.005	—	0.91
Architectural Coatings	0.14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.07	0.91	0.00	0.00	0.26	0.26	0.00	0.06	0.06	—	248	248	< 0.005	0.01	0.02	251

Vendor	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
Hauling	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
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.02	10.5
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.71	1.71	< 0.005	< 0.005	< 0.005	1.73
Vendor	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
Hauling	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

3.21. SoCalGas Pipeline Construction (2026) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.75	15.8	17.8	0.03	0.67	—	0.67	0.62	—	0.62	—	3,281	3,281	0.13	0.03	—	3,293
Dust From Material Movement	—	—	—	—	—	1.38	1.38	—	0.67	0.67	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.16	0.07	< 0.005	< 0.005	11.9	11.9	< 0.005	1.19	1.19	—	137	137	0.01	0.02	0.28	144
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.75	15.8	17.8	0.03	0.67	—	0.67	0.62	—	0.62	—	3,281	3,281	0.13	0.03	—	3,293

Dust From Material Movement	—	—	—	—	—	1.38	1.38	—	0.67	0.67	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.17	0.07	< 0.005	< 0.005	11.9	11.9	< 0.005	1.19	1.19	—	137	137	0.01	0.02	0.01	144
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.58	5.20	5.84	0.01	0.22	—	0.22	0.20	—	0.20	—	1,079	1,079	0.04	0.01	—	1,083
Dust From Material Movement	—	—	—	—	—	0.45	0.45	—	0.22	0.22	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.06	0.02	< 0.005	< 0.005	3.88	3.88	< 0.005	0.39	0.39	—	45.1	45.1	< 0.005	0.01	0.04	47.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.95	1.07	< 0.005	0.04	—	0.04	0.04	—	0.04	—	179	179	0.01	< 0.005	—	179
Dust From Material Movement	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.71	0.71	< 0.005	0.07	0.07	—	7.46	7.46	< 0.005	< 0.005	0.01	7.83
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	2.64	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	651	651	0.01	0.02	2.26	661
Vendor	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
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	31.2	31.2	< 0.005	< 0.005	0.06	32.8
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.17	0.17	2.27	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	620	620	0.01	0.02	0.06	627
Vendor	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
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	31.3	31.3	< 0.005	< 0.005	< 0.005	32.8
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.78	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	207	207	< 0.005	0.01	0.32	209
Vendor	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
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.01	10.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	34.2	34.2	< 0.005	< 0.005	0.05	34.6
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.70	1.70	< 0.005	< 0.005	< 0.005	1.79

3.22. SoCalGas Pipeline Construction (2026) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.96	7.86	18.9	0.03	0.33	—	0.33	0.30	—	0.30	—	3,281	3,281	0.13	0.03	—	3,293
Dust From Material Movement	—	—	—	—	—	1.38	1.38	—	0.67	0.67	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.16	0.07	< 0.005	< 0.005	11.9	11.9	< 0.005	1.19	1.19	—	137	137	0.01	0.02	0.28	144
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.96	7.86	18.9	0.03	0.33	—	0.33	0.30	—	0.30	—	3,281	3,281	0.13	0.03	—	3,293
Dust From Material Movement	—	—	—	—	—	1.38	1.38	—	0.67	0.67	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.17	0.07	< 0.005	< 0.005	11.9	11.9	< 0.005	1.19	1.19	—	137	137	0.01	0.02	0.01	144
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.31	2.58	6.20	0.01	0.11	—	0.11	0.10	—	0.10	—	1,079	1,079	0.04	0.01	—	1,083
Dust From Material Movement	—	—	—	—	—	0.45	0.45	—	0.22	0.22	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.06	0.02	< 0.005	< 0.005	3.88	3.88	< 0.005	0.39	0.39	—	45.1	45.1	< 0.005	0.01	0.04	47.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.47	1.13	< 0.005	0.02	—	0.02	0.02	—	0.02	—	179	179	0.01	< 0.005	—	179
Dust From Material Movement	—	—	—	—	—	0.08	0.08	—	0.04	0.04	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.71	0.71	< 0.005	0.07	0.07	—	7.46	7.46	< 0.005	< 0.005	0.01	7.83
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.15	2.64	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	651	651	0.01	0.02	2.26	661
Vendor	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
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	31.2	31.2	< 0.005	< 0.005	0.06	32.8

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.17	0.17	2.27	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	620	620	0.01	0.02	0.06	627
Vendor	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
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	31.3	31.3	< 0.005	< 0.005	< 0.005	32.8
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.06	0.78	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	207	207	< 0.005	0.01	0.32	209
Vendor	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
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.01	10.8
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.00	0.04	0.04	0.00	0.01	0.01	—	34.2	34.2	< 0.005	< 0.005	0.05	34.6
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.70	1.70	< 0.005	< 0.005	< 0.005	1.79

3.23. SoCalGas Pipeline Construction (2027) - Unmitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.69	15.0	17.6	0.03	0.62	—	0.62	0.57	—	0.57	—	3,281	3,281	0.13	0.03	—	3,292
Dust From Material Movement	—	—	—	—	—	1.38	1.38	—	0.67	0.67	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.16	0.07	< 0.005	< 0.005	11.9	11.9	< 0.005	1.19	1.19	—	134	134	0.01	0.02	0.26	141

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.69	15.0	17.6	0.03	0.62	—	0.62	0.57	—	0.57	—	3,281	3,281	0.13	0.03	—	3,292
Dust From Material Movement	—	—	—	—	—	1.38	1.38	—	0.67	0.67	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.16	0.07	< 0.005	< 0.005	11.9	11.9	< 0.005	1.19	1.19	—	134	134	0.01	0.02	0.01	141
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.34	3.03	3.55	0.01	0.12	—	0.12	0.11	—	0.11	—	661	661	0.03	0.01	—	664
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.13	0.13	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.03	0.01	< 0.005	< 0.005	2.38	2.38	< 0.005	0.24	0.24	—	27.1	27.1	< 0.005	< 0.005	0.02	28.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.55	0.65	< 0.005	0.02	—	0.02	0.02	—	0.02	—	109	109	< 0.005	< 0.005	—	110
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.43	0.43	< 0.005	0.04	0.04	—	4.49	4.49	< 0.005	< 0.005	< 0.005	4.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.15	2.47	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	640	640	0.01	0.02	2.03	649
Vendor	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

Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.6	30.6	< 0.005	< 0.005	0.06	32.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.15	2.13	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	609	609	0.01	0.02	0.05	617
Vendor	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
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.7	30.7	< 0.005	< 0.005	< 0.005	32.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.45	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	124	124	< 0.005	< 0.005	0.18	126
Vendor	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
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.18	6.18	< 0.005	< 0.005	0.01	6.49
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	20.6	20.6	< 0.005	< 0.005	0.03	20.9
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.02	1.02	< 0.005	< 0.005	< 0.005	1.07

3.24. SoCalGas Pipeline Construction (2027) - Mitigated

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

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	7.45	18.9	0.03	0.29	—	0.29	0.27	—	0.27	—	3,281	3,281	0.13	0.03	—	3,292
Dust From Material Movement	—	—	—	—	—	1.38	1.38	—	0.67	0.67	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.16	0.07	< 0.005	< 0.005	11.9	11.9	< 0.005	1.19	1.19	—	134	134	0.01	0.02	0.26	141

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.91	7.45	18.9	0.03	0.29	—	0.29	0.27	—	0.27	—	3,281	3,281	0.13	0.03	—	3,292
Dust From Material Movement	—	—	—	—	—	1.38	1.38	—	0.67	0.67	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.16	0.07	< 0.005	< 0.005	11.9	11.9	< 0.005	1.19	1.19	—	134	134	0.01	0.02	0.01	141
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	1.50	3.80	0.01	0.06	—	0.06	0.05	—	0.05	—	661	661	0.03	0.01	—	664
Dust From Material Movement	—	—	—	—	—	0.28	0.28	—	0.13	0.13	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.03	0.01	< 0.005	< 0.005	2.38	2.38	< 0.005	0.24	0.24	—	27.1	27.1	< 0.005	< 0.005	0.02	28.5
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.27	0.69	< 0.005	0.01	—	0.01	0.01	—	0.01	—	109	109	< 0.005	< 0.005	—	110
Dust From Material Movement	—	—	—	—	—	0.05	0.05	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.43	0.43	< 0.005	0.04	0.04	—	4.49	4.49	< 0.005	< 0.005	< 0.005	4.71
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.15	2.47	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	640	640	0.01	0.02	2.03	649
Vendor	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

Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.6	30.6	< 0.005	< 0.005	0.06	32.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.15	2.13	0.00	0.00	0.65	0.65	0.00	0.15	0.15	—	609	609	0.01	0.02	0.05	617
Vendor	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
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.7	30.7	< 0.005	< 0.005	< 0.005	32.2
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.03	0.45	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	124	124	< 0.005	< 0.005	0.18	126
Vendor	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
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.18	6.18	< 0.005	< 0.005	0.01	6.49
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.08	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	20.6	20.6	< 0.005	< 0.005	0.03	20.9
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.02	1.02	< 0.005	< 0.005	< 0.005	1.07

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	0.02	0.01	0.25	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.02	—	70.2	70.2	< 0.005	< 0.005	0.22	70.9

General Heavy Industry	< 0.005	0.02	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	39.9	39.9	< 0.005	< 0.005	0.20	41.1
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.02	0.04	0.29	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	110	110	< 0.005	< 0.005	0.42	112
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	0.02	0.02	0.22	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.02	—	66.8	66.8	< 0.005	< 0.005	0.01	67.3
General Heavy Industry	< 0.005	0.02	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	39.7	39.7	< 0.005	< 0.005	0.01	40.7
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.02	0.04	0.26	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	106	106	< 0.005	0.01	0.01	108
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	< 0.005	0.04	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	11.2	11.2	< 0.005	< 0.005	0.02	11.3
General Heavy Industry	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.58	6.58	< 0.005	< 0.005	0.01	6.76
Other Asphalt Surfaces	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

Other Non-Asphalt Surfaces	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
Total	< 0.005	0.01	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	17.8	17.8	< 0.005	< 0.005	0.03	18.1

4.1.2. Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	0.02	0.01	0.25	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.02	—	70.2	70.2	< 0.005	< 0.005	0.22	70.9
General Heavy Industry	< 0.005	0.02	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	39.9	39.9	< 0.005	< 0.005	0.20	41.1
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.02	0.04	0.29	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	110	110	< 0.005	< 0.005	0.42	112
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	0.02	0.02	0.22	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.02	—	66.8	66.8	< 0.005	< 0.005	0.01	67.3
General Heavy Industry	< 0.005	0.02	0.04	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	39.7	39.7	< 0.005	< 0.005	0.01	40.7

Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.02	0.04	0.26	< 0.005	< 0.005	0.10	0.10	< 0.005	0.02	0.03	—	106	106	< 0.005	0.01	0.01	108
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	< 0.005	0.04	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	11.2	11.2	< 0.005	< 0.005	0.02	11.3
General Heavy Industry	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	6.58	6.58	< 0.005	< 0.005	0.01	6.76
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	< 0.005	0.01	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	17.8	17.8	< 0.005	< 0.005	0.03	18.1

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	69.3	69.3	< 0.005	< 0.005	—	69.6

General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	308	308	0.02	< 0.005	—	309
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	378	378	0.02	< 0.005	—	379
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	69.3	69.3	< 0.005	< 0.005	—	69.6
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	308	308	0.02	< 0.005	—	309
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	378	378	0.02	< 0.005	—	379
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	11.5	11.5	< 0.005	< 0.005	—	11.5
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	51.0	51.0	< 0.005	< 0.005	—	51.2
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	62.5	62.5	< 0.005	< 0.005	—	62.7

4.2.2. Electricity Emissions By Land Use - Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	69.3	69.3	< 0.005	< 0.005	—	69.6
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	308	308	0.02	< 0.005	—	309
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	378	378	0.02	< 0.005	—	379
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	69.3	69.3	< 0.005	< 0.005	—	69.6
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	308	308	0.02	< 0.005	—	309

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	378	378	0.02	< 0.005	—	379
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	11.5	11.5	< 0.005	< 0.005	—	11.5
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	51.0	51.0	< 0.005	< 0.005	—	51.2
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	62.5	62.5	< 0.005	< 0.005	—	62.7

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.7	21.7	< 0.005	< 0.005	—	21.7
General Heavy Industry	0.01	0.25	0.21	< 0.005	0.02	—	0.02	0.02	—	0.02	—	302	302	0.03	< 0.005	—	303

Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	324	324	0.03	< 0.005	—	325
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.7	21.7	< 0.005	< 0.005	—	21.7
General Heavy Industry	0.01	0.25	0.21	< 0.005	0.02	—	0.02	0.02	—	0.02	—	302	302	0.03	< 0.005	—	303
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	324	324	0.03	< 0.005	—	325
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.59	3.59	< 0.005	< 0.005	—	3.60
General Heavy Industry	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	50.1	50.1	< 0.005	< 0.005	—	50.2
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	53.7	53.7	< 0.005	< 0.005	—	53.8

4.2.4. Natural Gas Emissions By Land Use - Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.7	21.7	< 0.005	< 0.005	—	21.7
General Heavy Industry	0.01	0.25	0.21	< 0.005	0.02	—	0.02	0.02	—	0.02	—	302	302	0.03	< 0.005	—	303
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	324	324	0.03	< 0.005	—	325
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	0.02	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	21.7	21.7	< 0.005	< 0.005	—	21.7
General Heavy Industry	0.01	0.25	0.21	< 0.005	0.02	—	0.02	0.02	—	0.02	—	302	302	0.03	< 0.005	—	303
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	0.01	0.27	0.23	< 0.005	0.02	—	0.02	0.02	—	0.02	—	324	324	0.03	< 0.005	—	325

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	3.59	3.59	< 0.005	< 0.005	—	3.60
General Heavy Industry	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	50.1	50.1	< 0.005	< 0.005	—	50.2
Other Asphalt Surfaces	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
Other Non-Asphalt Surfaces	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
Total	< 0.005	0.05	0.04	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	53.7	53.7	< 0.005	< 0.005	—	53.8

4.3. Area Emissions by Source

4.3.1. Unmitigated

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

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.18	0.01	1.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.42	4.42	< 0.005	< 0.005	—	4.44
Total	0.79	0.01	1.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.42	4.42	< 0.005	< 0.005	—	4.44

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.62	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.02	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.50	0.50	< 0.005	< 0.005	—	0.50
Total	0.13	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.50	0.50	< 0.005	< 0.005	—	0.50

4.3.2. Mitigated

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

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Landsca Equipment	0.18	0.01	1.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.42	4.42	< 0.005	< 0.005	—	4.44
Total	0.79	0.01	1.07	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	4.42	4.42	< 0.005	< 0.005	—	4.44
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.54	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.07	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	0.62	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.02	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.50	0.50	< 0.005	< 0.005	—	0.50
Total	0.13	< 0.005	0.13	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	0.50	0.50	< 0.005	< 0.005	—	0.50

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Office Building	—	—	—	—	—	—	—	—	—	—	0.91	4.71	5.62	0.09	< 0.005	—	8.63
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	9.77	50.6	60.3	1.00	0.02	—	92.7
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.91	4.71	5.62	0.09	< 0.005	—	8.63
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	9.77	50.6	60.3	1.00	0.02	—	92.7
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.15	0.78	0.93	0.02	< 0.005	—	1.43
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	1.62	8.37	9.99	0.17	< 0.005	—	15.3

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	1.77	9.15	10.9	0.18	< 0.005	—	16.8

4.4.2. Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.91	4.71	5.62	0.09	< 0.005	—	8.63
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	9.77	50.6	60.3	1.00	0.02	—	92.7
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.91	4.71	5.62	0.09	< 0.005	—	8.63

General Heavy Industry	—	—	—	—	—	—	—	—	—	—	9.77	50.6	60.3	1.00	0.02	—	92.7
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	10.7	55.3	66.0	1.10	0.03	—	101
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.15	0.78	0.93	0.02	< 0.005	—	1.43
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	1.62	8.37	9.99	0.17	< 0.005	—	15.3
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	1.77	9.15	10.9	0.18	< 0.005	—	16.8

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Office Building	—	—	—	—	—	—	—	—	—	—	1.34	0.00	1.34	0.13	0.00	—	4.68
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	14.7	0.00	14.7	1.47	0.00	—	51.5
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	1.34	0.00	1.34	0.13	0.00	—	4.68
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	14.7	0.00	14.7	1.47	0.00	—	51.5
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.22	0.00	0.22	0.02	0.00	—	0.78
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	2.44	0.00	2.44	0.24	0.00	—	8.53

Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	2.66	0.00	2.66	0.27	0.00	—	9.31

4.5.2. Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	1.34	0.00	1.34	0.13	0.00	—	4.68
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	14.7	0.00	14.7	1.47	0.00	—	51.5
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	1.34	0.00	1.34	0.13	0.00	—	4.68

General Heavy Industry	—	—	—	—	—	—	—	—	—	—	14.7	0.00	14.7	1.47	0.00	—	51.5
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	16.1	0.00	16.1	1.61	0.00	—	56.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.22	0.00	0.22	0.02	0.00	—	0.78
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	2.44	0.00	2.44	0.24	0.00	—	8.53
Other Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	2.66	0.00	2.66	0.27	0.00	—	9.31

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.95	0.95
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.95	0.95

4.6.2. Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01	0.01
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.74	5.74
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	< 0.005	< 0.005
General Heavy Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.95	0.95
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.95	0.95

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

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

4.7.2. Mitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

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

Equipment	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8.2. Mitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Thermal Oxidizer (TOU)	4.34	25.3	57.8	124	5.16	—	5.16	5.16	—	5.16	—	452,333	452,333	1.59	0.16	—	452,420
Off-Spec Flare Pilot	0.01	0.14	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	171	171	< 0.005	< 0.005	—	171
Genset with ICE	0.66	4.01	6.69	0.02	0.40	—	0.40	0.40	—	0.40	—	111	111	< 0.005	< 0.005	—	111
Fugitives	—	—	—	—	—	—	—	—	—	—	—	3.60	3.60	73.9	—	—	1,851
Product Gas	—	—	—	—	—	—	—	—	—	—	—	417,207	417,207	7.72	0.77	—	417,630
Total	5.01	29.4	64.6	124	5.57	—	5.57	5.57	—	5.57	—	869,826	869,826	83.2	0.93	—	872,184
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Thermal Oxidizer (TOU)	4.34	25.3	57.8	124	5.16	—	5.16	5.16	—	5.16	—	452,333	452,333	1.59	0.16	—	452,420
Off-Spec Flare Pilot	0.01	0.14	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	171	171	< 0.005	< 0.005	—	171
Genset with ICE	0.66	4.01	6.69	0.02	0.40	—	0.40	0.40	—	0.40	—	111	111	< 0.005	< 0.005	—	111
Fugitives	—	—	—	—	—	—	—	—	—	—	—	3.60	3.60	73.9	—	—	1,851
Product Gas	—	—	—	—	—	—	—	—	—	—	—	417,207	417,207	7.72	0.77	—	417,630
Total	5.01	29.4	64.6	124	5.57	—	5.57	5.57	—	5.57	—	869,826	869,826	83.2	0.93	—	872,184
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Thermal Oxidizer (TOU)	0.79	4.62	10.6	16.0	0.94	—	0.94	0.94	—	0.94	—	74,876	74,876	0.26	0.03	—	74,890
Off-Spec Flare Pilot	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	46.5	46.5	< 0.005	< 0.005	—	46.5
Genset with ICE	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.4	18.4	< 0.005	< 0.005	—	18.4
Fugitives	—	—	—	—	—	—	—	—	—	—	—	0.60	0.60	12.2	—	—	306
Product Gas	—	—	—	—	—	—	—	—	—	—	—	69,061	69,061	1.28	0.13	—	69,132
Total	0.80	4.66	10.6	16.0	0.94	—	0.94	0.94	—	0.94	—	144,003	144,003	13.8	0.15	—	144,393

4.9.2. Mitigated

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

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Thermal Oxidizer (TOU)	4.34	25.3	57.8	124	5.16	—	5.16	5.16	—	5.16	—	452,333	452,333	1.59	0.16	—	452,420
Off-Spec Flare Pilot	0.01	0.14	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	171	171	< 0.005	< 0.005	—	171
Genset with ICE	0.66	4.01	6.69	0.02	0.40	—	0.40	0.40	—	0.40	—	111	111	< 0.005	< 0.005	—	111
Fugitives	—	—	—	—	—	—	—	—	—	—	—	3.60	3.60	73.9	—	—	1,851
Product Gas	—	—	—	—	—	—	—	—	—	—	—	417,207	417,207	7.72	0.77	—	417,630
Total	5.01	29.4	64.6	124	5.57	—	5.57	5.57	—	5.57	—	869,826	869,826	83.2	0.93	—	872,184

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Thermal Oxidizer (TOU)	4.34	25.3	57.8	124	5.16	—	5.16	5.16	—	5.16	—	452,333	452,333	1.59	0.16	—	452,420
Off-Spec Flare Pilot	0.01	0.14	0.14	< 0.005	0.01	—	0.01	0.01	—	0.01	—	171	171	< 0.005	< 0.005	—	171
Genset with ICE	0.66	4.01	6.69	0.02	0.40	—	0.40	0.40	—	0.40	—	111	111	< 0.005	< 0.005	—	111
Fugitives	—	—	—	—	—	—	—	—	—	—	—	3.60	3.60	73.9	—	—	1,851
Product Gas	—	—	—	—	—	—	—	—	—	—	—	417,207	417,207	7.72	0.77	—	417,630
Total	5.01	29.4	64.6	124	5.57	—	5.57	5.57	—	5.57	—	869,826	869,826	83.2	0.93	—	872,184
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Thermal Oxidizer (TOU)	0.79	4.62	10.6	16.0	0.94	—	0.94	0.94	—	0.94	—	74,876	74,876	0.26	0.03	—	74,890
Off-Spec Flare Pilot	< 0.005	0.03	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	46.5	46.5	< 0.005	< 0.005	—	46.5
Genset with ICE	< 0.005	0.02	0.03	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	18.4	18.4	< 0.005	< 0.005	—	18.4
Fugitives	—	—	—	—	—	—	—	—	—	—	—	0.60	0.60	12.2	—	—	306
Product Gas	—	—	—	—	—	—	—	—	—	—	—	69,061	69,061	1.28	0.13	—	69,132
Total	0.80	4.66	10.6	16.0	0.94	—	0.94	0.94	—	0.94	—	144,003	144,003	13.8	0.15	—	144,393

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

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

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

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

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

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

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

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

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

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

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

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

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Earthworks A	Site Preparation	10/28/2025	11/10/2025	5.00	10.0	—
Earthworks B	Grading	11/11/2025	1/5/2026	5.00	40.0	—
Building Construction A	Building Construction	7/13/2026	1/8/2027	5.00	130	Site/Civil Work
Building Construction B	Building Construction	8/7/2026	11/6/2026	5.00	66.0	Structural
Building Construction C	Building Construction	5/18/2026	2/26/2027	5.00	205	Mechanical and Electrical
Paving	Paving	1/11/2027	1/22/2027	5.00	10.0	—
Architectural Coating	Architectural Coating	11/7/2026	11/28/2026	5.00	15.0	—
SoCalGas Pipeline Construction	Linear, Drainage, Utilities, & Sub-Grade	7/17/2026	4/13/2027	5.00	193	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Earthworks A	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Earthworks A	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37

Earthworks B	Rubber Tired Dozers	Diesel	Average	2.00	6.00	148	0.41
Earthworks B	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Earthworks B	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	367	0.40
Earthworks B	Sweepers/Scrubbers	Diesel	Average	1.00	6.00	36.0	0.46
Earthworks B	Dumpers/Tenders	Diesel	Average	10.0	6.00	16.0	0.38
Earthworks B	Off-Highway Trucks	Diesel	Average	1.00	6.00	376	0.38
Earthworks B	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Building Construction A	Cranes	Diesel	Average	2.00	6.00	367	0.29
Building Construction A	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20
Building Construction A	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	14.0	0.74
Building Construction A	Aerial Lifts	Diesel	Average	1.00	6.00	84.0	0.37
Building Construction A	Off-Highway Trucks	Diesel	Average	1.00	6.00	46.0	0.45
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
SoCalGas Pipeline Construction	Bore/Drill Rigs	Diesel	Average	1.00	6.00	83.0	0.50
SoCalGas Pipeline Construction	Excavators	Diesel	Average	1.00	6.00	36.0	0.38
SoCalGas Pipeline Construction	Rubber Tired Dozers	Diesel	Average	1.00	6.00	367	0.40

SoCalGas Pipeline Construction	Tractors/Loaders/Back	Diesel	Average	1.00	6.00	84.0	0.37
SoCalGas Pipeline Construction	Cranes	Diesel	Average	1.00	6.00	367	0.29
SoCalGas Pipeline Construction	Graders	Diesel	Average	1.00	6.00	148	0.41
SoCalGas Pipeline Construction	Other General Industrial Equipment	Diesel	Average	1.00	6.00	35.0	0.34
SoCalGas Pipeline Construction	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
SoCalGas Pipeline Construction	Other Construction Equipment	Diesel	Average	1.00	6.00	82.0	0.42

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Earthworks A	Rubber Tired Dozers	Diesel	Average	3.00	8.00	367	0.40
Earthworks A	Tractors/Loaders/Backhoes	Diesel	Average	4.00	8.00	84.0	0.37
Earthworks B	Rubber Tired Dozers	Diesel	Average	2.00	6.00	148	0.41
Earthworks B	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	84.0	0.37
Earthworks B	Cement and Mortar Mixers	Diesel	Average	1.00	6.00	367	0.40
Earthworks B	Sweepers/Scrubbers	Diesel	Average	1.00	6.00	36.0	0.46
Earthworks B	Dumpers/Tenders	Diesel	Average	10.0	6.00	16.0	0.38
Earthworks B	Off-Highway Trucks	Diesel	Average	1.00	6.00	376	0.38
Earthworks B	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Building Construction A	Cranes	Diesel	Average	2.00	6.00	367	0.29
Building Construction A	Forklifts	Diesel	Average	3.00	8.00	82.0	0.20

Building Construction A	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	14.0	0.74
Building Construction A	Aerial Lifts	Diesel	Average	1.00	6.00	84.0	0.37
Building Construction A	Off-Highway Trucks	Diesel	Average	1.00	6.00	46.0	0.45
Paving	Tractors/Loaders/Backhoes	Diesel	Average	1.00	8.00	84.0	0.37
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	6.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	6.00	36.0	0.38
Paving	Cement and Mortar Mixers	Diesel	Average	2.00	6.00	10.0	0.56
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
SoCalGas Pipeline Construction	Bore/Drill Rigs	Diesel	Average	1.00	6.00	83.0	0.50
SoCalGas Pipeline Construction	Excavators	Diesel	Average	1.00	6.00	36.0	0.38
SoCalGas Pipeline Construction	Rubber Tired Dozers	Diesel	Tier 4 Final	1.00	6.00	367	0.40
SoCalGas Pipeline Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	84.0	0.37
SoCalGas Pipeline Construction	Cranes	Diesel	Tier 4 Final	1.00	6.00	367	0.29
SoCalGas Pipeline Construction	Graders	Diesel	Average	1.00	6.00	148	0.41
SoCalGas Pipeline Construction	Other General Industrial Equipment	Diesel	Average	1.00	6.00	35.0	0.34
SoCalGas Pipeline Construction	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48
SoCalGas Pipeline Construction	Other Construction Equipment	Diesel	Average	1.00	6.00	82.0	0.42

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Earthworks A	—	—	—	—
Earthworks A	Worker	20.0	18.5	LDA,LDT1,LDT2
Earthworks A	Vendor	—	10.2	HHDT,MHDT
Earthworks A	Hauling	0.00	20.0	HHDT
Earthworks A	Onsite truck	—	—	HHDT
Earthworks B	—	—	—	—
Earthworks B	Worker	20.0	18.5	LDA,LDT1,LDT2
Earthworks B	Vendor	—	10.2	HHDT,MHDT
Earthworks B	Hauling	367	20.0	HHDT
Earthworks B	Onsite truck	—	—	HHDT
Building Construction A	—	—	—	—
Building Construction A	Worker	20.0	18.5	LDA,LDT1,LDT2
Building Construction A	Vendor	4.05	10.2	HHDT,MHDT
Building Construction A	Hauling	0.00	20.0	HHDT
Building Construction A	Onsite truck	—	—	HHDT
Building Construction B	—	—	—	—
Building Construction B	Worker	50.0	18.5	LDA,LDT1,LDT2
Building Construction B	Vendor	4.05	10.2	HHDT,MHDT
Building Construction B	Hauling	0.00	20.0	HHDT
Building Construction B	Onsite truck	—	—	HHDT
Building Construction C	—	—	—	—
Building Construction C	Worker	50.0	18.5	LDA,LDT1,LDT2
Building Construction C	Vendor	4.05	10.2	HHDT,MHDT
Building Construction C	Hauling	0.00	20.0	HHDT

Building Construction C	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	20.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
SoCalGas Pipeline Construction	—	—	—	—
SoCalGas Pipeline Construction	Worker	50.0	18.5	LDA,LDT1,LDT2
SoCalGas Pipeline Construction	Vendor	0.00	10.2	HHDT,MHDT
SoCalGas Pipeline Construction	Hauling	0.46	20.0	HHDT
SoCalGas Pipeline Construction	Onsite truck	2.00	20.0	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Earthworks A	—	—	—	—
Earthworks A	Worker	20.0	18.5	LDA,LDT1,LDT2
Earthworks A	Vendor	—	10.2	HHDT,MHDT
Earthworks A	Hauling	0.00	20.0	HHDT
Earthworks A	Onsite truck	—	—	HHDT
Earthworks B	—	—	—	—
Earthworks B	Worker	20.0	18.5	LDA,LDT1,LDT2
Earthworks B	Vendor	—	10.2	HHDT,MHDT
Earthworks B	Hauling	367	20.0	HHDT

Earthworks B	Onsite truck	—	—	HHDT
Building Construction A	—	—	—	—
Building Construction A	Worker	20.0	18.5	LDA,LDT1,LDT2
Building Construction A	Vendor	4.05	10.2	HHDT,MHDT
Building Construction A	Hauling	0.00	20.0	HHDT
Building Construction A	Onsite truck	—	—	HHDT
Building Construction B	—	—	—	—
Building Construction B	Worker	50.0	18.5	LDA,LDT1,LDT2
Building Construction B	Vendor	4.05	10.2	HHDT,MHDT
Building Construction B	Hauling	0.00	20.0	HHDT
Building Construction B	Onsite truck	—	—	HHDT
Building Construction C	—	—	—	—
Building Construction C	Worker	50.0	18.5	LDA,LDT1,LDT2
Building Construction C	Vendor	4.05	10.2	HHDT,MHDT
Building Construction C	Hauling	0.00	20.0	HHDT
Building Construction C	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	20.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.00	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	20.0	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
SoCalGas Pipeline Construction	—	—	—	—
SoCalGas Pipeline Construction	Worker	50.0	18.5	LDA,LDT1,LDT2

SoCalGas Pipeline Construction	Vendor	0.00	10.2	HHDT,MHDT
SoCalGas Pipeline Construction	Hauling	0.46	20.0	HHDT
SoCalGas Pipeline Construction	Onsite truck	2.00	20.0	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	55%	55%
Sweep paved roads once per month	9%	9%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	0.00	0.00	37,073	12,358	9,605

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Earthworks A	0.00	0.00	10.3	0.00	—
Earthworks B	93,190	24,196	36.8	0.00	—
Paving	0.00	0.00	0.00	0.00	3.68
SoCalGas Pipeline Construction	0.00	704	0.00	0.00	—

5.6.2. Construction Earthmoving Control Strategies

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

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
General Office Building	0.00	0%
General Heavy Industry	0.00	0%
Other Asphalt Surfaces	0.53	100%
User Defined Linear	0.00	100%
Other Non-Asphalt Surfaces	3.14	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2025	0.00	532	0.03	< 0.005
2026	0.00	532	0.03	< 0.005
2027	0.00	532	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
General Office Building	8.00	8.00	8.00	2,920	108	108	108	39,373
General Heavy Industry	2.00	2.00	2.00	730	27.0	27.0	27.0	9,843

Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
General Office Building	8.00	8.00	8.00	2,920	108	108	108	39,373
General Heavy Industry	2.00	2.00	2.00	730	27.0	27.0	27.0	9,843
Other Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0	0.00	37,073	12,358	9,605

5.10.3. Landscape Equipment

Season	Unit	Value

Snow Days	day/yr	0.00
Summer Days	day/yr	250

5.10.4. Landscape Equipment - Mitigated

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

5.11. Operational Energy Consumption

5.11.1. Unmitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
General Office Building	47,580	532	0.0330	0.0040	67,675
General Heavy Industry	211,472	532	0.0330	0.0040	943,569
Other Asphalt Surfaces	0.00	532	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	532	0.0330	0.0040	0.00

5.11.2. Mitigated

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

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
General Office Building	47,580	532	0.0330	0.0040	67,675
General Heavy Industry	211,472	532	0.0330	0.0040	943,569
Other Asphalt Surfaces	0.00	532	0.0330	0.0040	0.00
Other Non-Asphalt Surfaces	0.00	532	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
General Office Building	474,549	0.00
General Heavy Industry	5,097,906	0.00
Other Asphalt Surfaces	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
General Office Building	474,549	0.00
General Heavy Industry	5,097,906	0.00
Other Asphalt Surfaces	0.00	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
General Office Building	2.48	—
General Heavy Industry	27.3	—
Other Asphalt Surfaces	0.00	—
Other Non-Asphalt Surfaces	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
General Office Building	2.48	—
General Heavy Industry	27.3	—

Other Asphalt Surfaces	0.00	—
Other Non-Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
General Heavy Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
General Office Building	Household refrigerators and/or freezers	R-134a	1,430	0.02	0.60	0.00	1.00
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088	< 0.005	4.00	4.00	18.0
General Heavy Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

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

5.15.2. Mitigated

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

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

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

5.16.2. Process Boilers

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

5.17. User Defined

Equipment Type	Fuel Type
Thermal Oxidizer (TOU)	Natural Gas and 2 Tail Gas Streams
Off-Spec Flare Pilot	Pilot Gas
Genset with ICE	Natural Gas
Fugitives	Natural Gas
Product Gas	Natural Gas

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

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

5.18.2.2. Mitigated

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

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	9.78	annual days of extreme heat
Extreme Precipitation	3.80	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	41.0	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	1	1	1	2

Wildfire	1	1	1	2
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	65.7
AQ-PM	55.2
AQ-DPM	65.8
Drinking Water	47.3
Lead Risk Housing	6.36
Pesticides	65.3
Toxic Releases	65.8
Traffic	55.3
Effect Indicators	—
CleanUp Sites	71.6
Groundwater	39.9

Haz Waste Facilities/Generators	68.4
Impaired Water Bodies	43.8
Solid Waste	83.8
Sensitive Population	—
Asthma	2.50
Cardio-vascular	5.61
Low Birth Weights	29.9
Socioeconomic Factor Indicators	—
Education	13.7
Housing	23.4
Linguistic	70.3
Poverty	18.2
Unemployment	48.3

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	77.62094187
Employed	84.28076479
Median HI	92.14679841
Education	—
Bachelor's or higher	94.35390735
High school enrollment	21.05735917
Preschool enrollment	62.04285898
Transportation	—
Auto Access	86.34672142
Active commuting	14.52585654

Social	—
2-parent households	84.25510073
Voting	66.95752598
Neighborhood	—
Alcohol availability	88.92595919
Park access	28.96188887
Retail density	5.607596561
Supermarket access	46.38778391
Tree canopy	34.62081355
Housing	—
Homeownership	50.58385731
Housing habitability	79.40459387
Low-inc homeowner severe housing cost burden	70.24252534
Low-inc renter severe housing cost burden	87.52726806
Uncrowded housing	65.16104196
Health Outcomes	—
Insured adults	93.45566534
Arthritis	99.0
Asthma ER Admissions	98.5
High Blood Pressure	98.7
Cancer (excluding skin)	94.8
Asthma	95.7
Coronary Heart Disease	99.2
Chronic Obstructive Pulmonary Disease	99.4
Diagnosed Diabetes	98.9
Life Expectancy at Birth	84.7
Cognitively Disabled	82.5
Physically Disabled	94.1

Heart Attack ER Admissions	95.5
Mental Health Not Good	92.6
Chronic Kidney Disease	99.0
Obesity	98.0
Pedestrian Injuries	45.9
Physical Health Not Good	99.4
Stroke	99.1
Health Risk Behaviors	—
Binge Drinking	5.2
Current Smoker	88.4
No Leisure Time for Physical Activity	94.4
Climate Change Exposures	—
Wildfire Risk	38.7
SLR Inundation Area	0.0
Children	17.1
Elderly	90.8
English Speaking	40.4
Foreign-born	65.9
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	77.7
Traffic Density	31.4
Traffic Access	23.0
Other Indices	—
Hardship	10.7
Other Decision Support	—
2016 Voting	74.5

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	30.0
Healthy Places Index Score for Project Location (b)	88.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Project Specific
Construction: Off-Road Equipment	Project Specific
Operations: Vehicle Data	Anticipated trip rate based on 4 additional employees
Operations: Fleet Mix	Anticipated Fleet Mix
Construction: Dust From Material Movement	Project specific
Construction: Trips and VMT	Project specific

APPENDIX B – OPERATIONAL EQUIPMENT SPECIFICATIONS

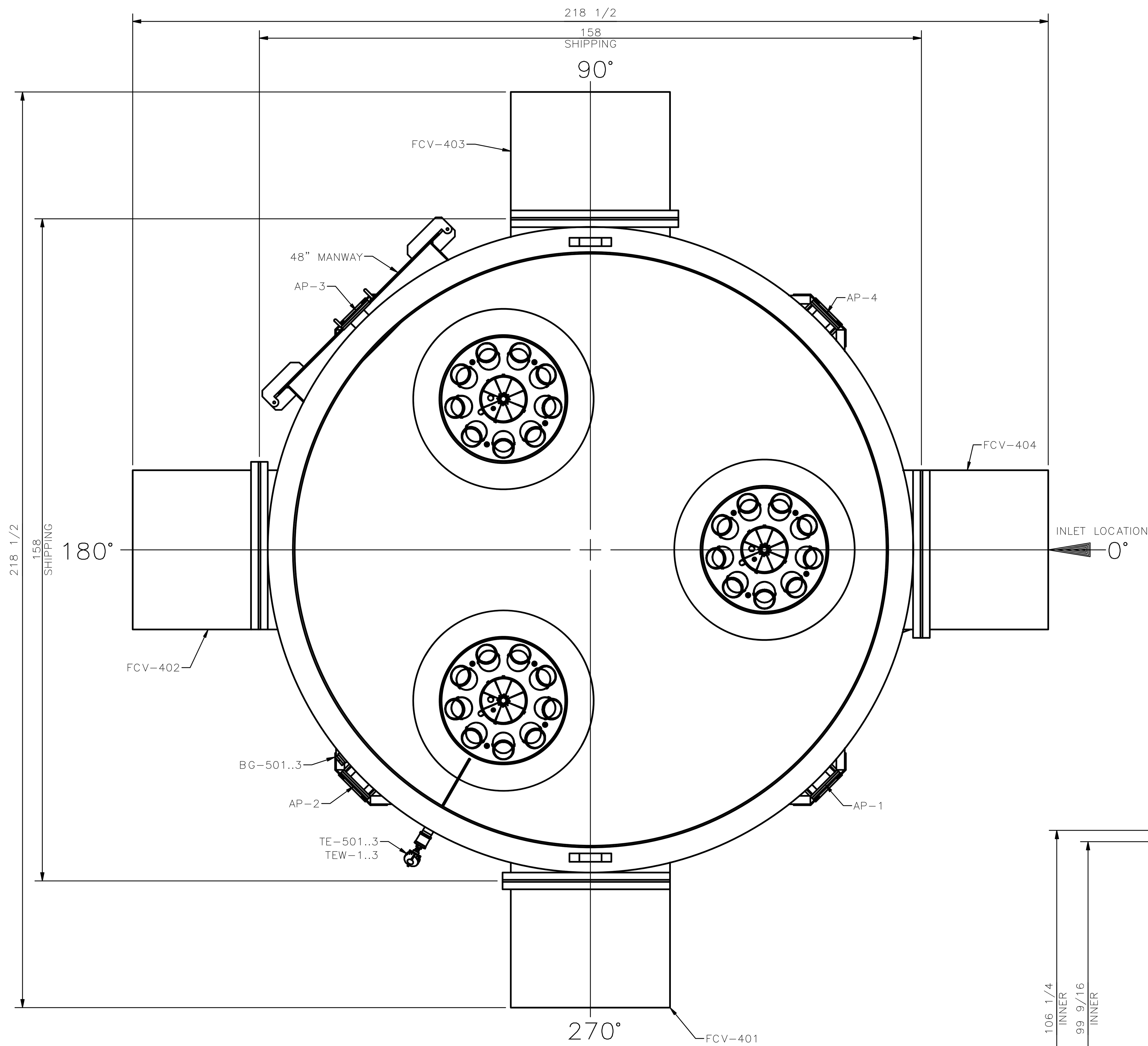
Equipment Data Sheet

120.0 MMBTU Flare

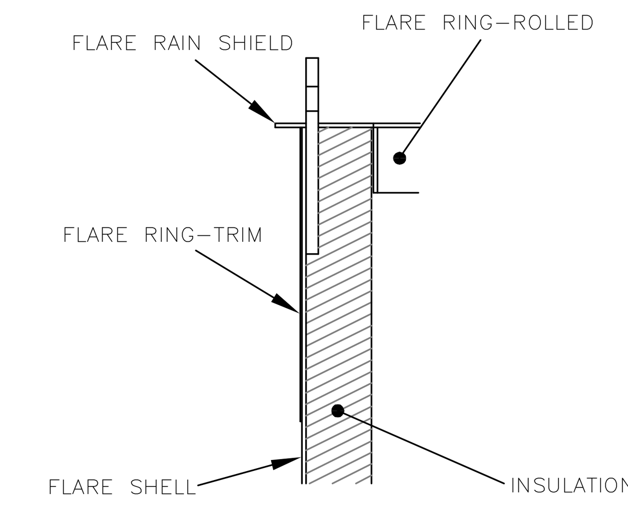
Spec. # 2125
Sheet # 1 Of 1
By: Kristi Wade
Date: 05 April 2024

Reference Designator or Item #	Off-Spec RNG Low NOx Enclosed Flare
Quantity	1
Manufacturer or Approved Equal	PEI
Model #	FL-150-50-EN
RNG Max Capacity	120.0 MMBtu/h
RNG Min Capacity	24.0 MMBtu/h
Turn Down Ratio	5:1
Emissions Compliance Design Criteria	≤ 0.06 lb/MMBtu NOx
Temperature/Retention Time	Minimum 1400 Deg F for 0.6 Seconds
Maximum Skin Temperature	250 °F
Inlet Centerline Height	TBD
Flare Shell Height, O.D., Thickness	50', 150", 0.4375", ASTM A-36
Air Entrance Louvers	4 each – 91" w x 24" h, Automatic Controls
Flare floor, feet, manway, lift lug	ASTM-A-36
Top Ring & Shield	304L S.S.
Flare Insulation	4" Ceramic Fiber
Insulation Attachment	Inconel/SS 310 Studs & Retainers
Insulation Layers	3 ea. - Overlapping
Insulation Density	2" 4 lb/ft^3 and 2" 8 lb/ft^3
Inlet Nozzle Size	12" ANSI 150# Flange Pattern
Flare Burner Manifold & Associated Parts	304L S.S.
Combustion Air Blower Connected HP	< 200 HP
External Ladder	OSHA & ANSI A14.3 Standards
Manway Opening Size	24" x 24"
Flare Reference Drawing	PA-001-1363
Flare Reference Emissions Rule	SCAQMD Rule 1118.1 Other Flared Gas

COMMENTS or NOTES:



PLAN VIEW
SCALE 1:20



TYP TOP CROSS SECTION
SCALE: NTS

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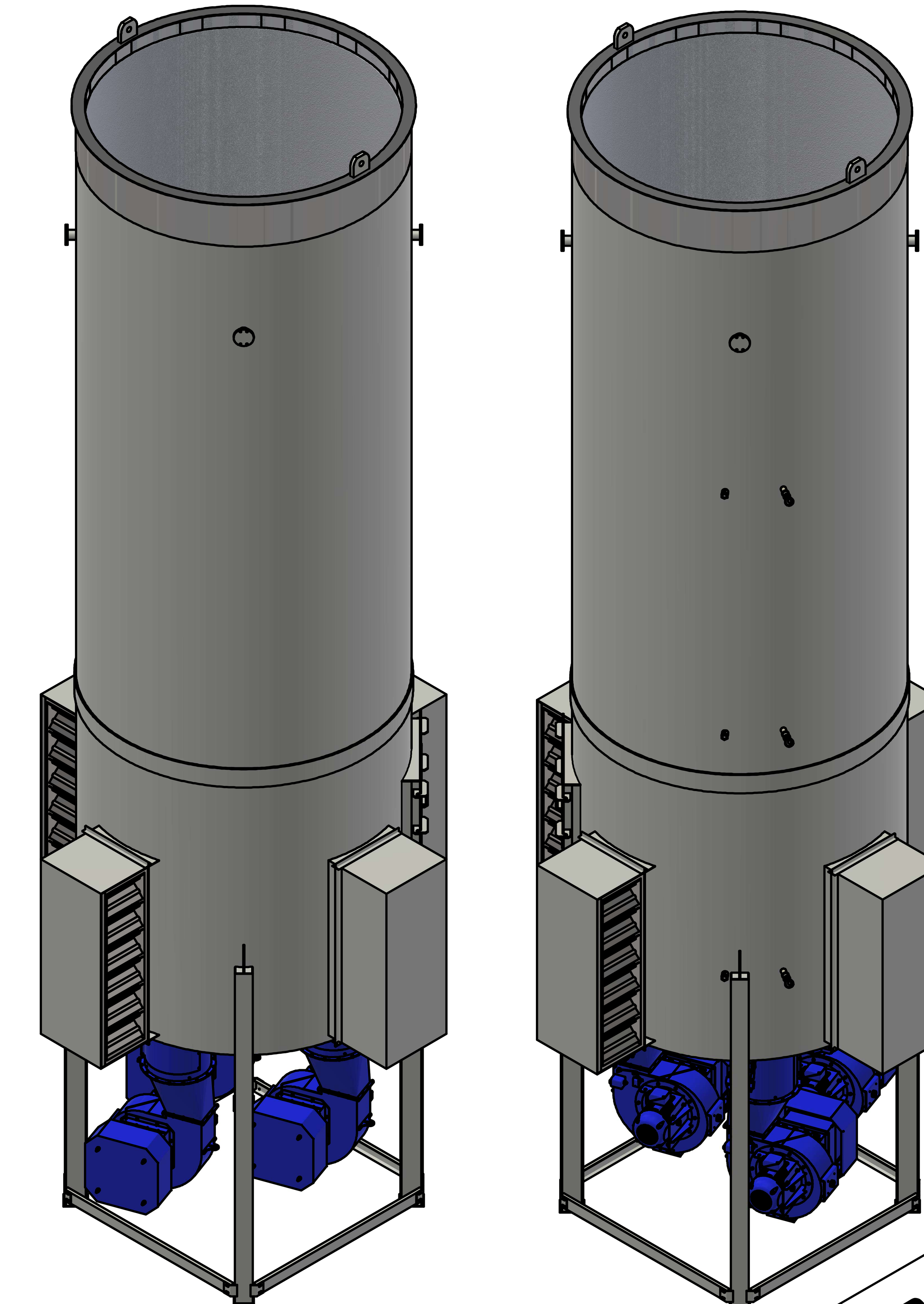
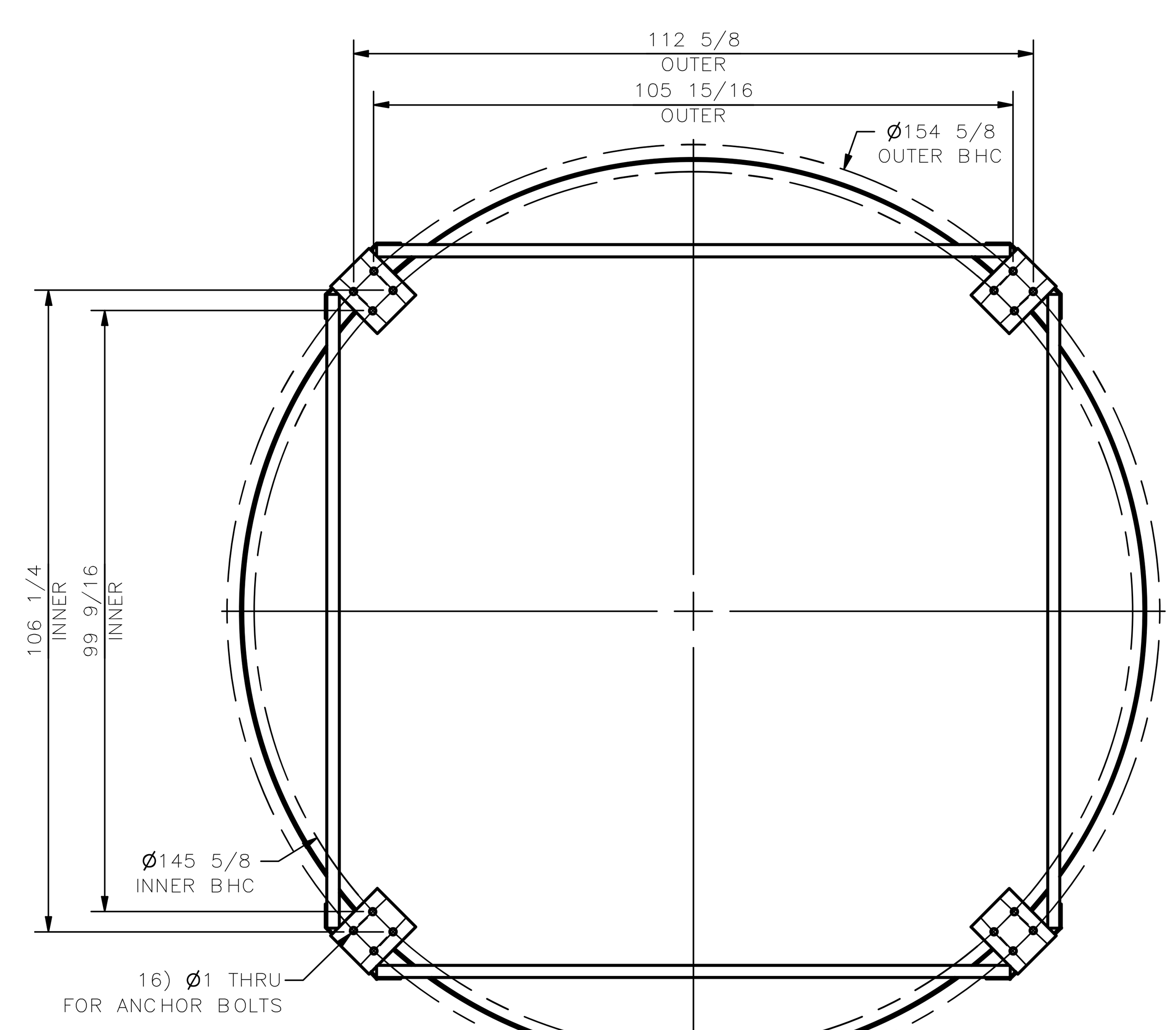


ISOMETRIC VIEWS
SCALE 1:50

REDUCED FROM ORIGINAL SIZE



FOOT LAYOUT
SCALE 1:25

NOTE:
1. CLASSIFIED AREAS ARE SPECIFICALLY NOTED. ALL OTHER AREAS ARE UNCLASSIFIED.
2. SKIDS MUST BE LEVEL 1/8" SIDE TO SIDE, 1/4" END TO END.
3. CONTACT PERENNIAL ENERGY FOR INTERIM MAINTENANCE PROCEDURES IF EQUIPMENT IS NOT RUNNING WITHIN 21 DAYS OF ARRIVAL ON SITE.
4. INSTALLED HEIGHT OF TOUCHSCREEN (HMI) SHOULD BE 66" ABOVE FINISHED GRADE AT OPERATOR LOCATION. IF THE PANEL IS MOUNTED ON A PAD THAT IS ABOVE SURROUNDING GRADE, INFORM PEI TO ALLOW FOR ADJUSTMENT IN HMI ELEVATION.
5. REMOVE SHIPPING STANDS, BRACES, AND COVERS PRIOR TO INSTALLATION.
6. UNLESS OTHERWISE NOTED, USE ON GAS WITH MORE THAN 1500 PPM, H2S VOIDS WARRANTY.
7. BLOWERS 50HP AND ABOVE MUST HAVE SKID FRAME RAILS UNDER THE BLOWER SOLIDLY SHIMMED OR GROUTED TO A SUITABLE CONCRETE PAD.
8. TO ASSEMBLY DIMENSIONS SHOWN ARE NOT ACTUAL SHIPPING DIMENSIONS, CONFIRM FIELD DIMENSIONS PRIOR TO ORDERING THE PROPER SHIPPING PERMITS.
9. DO NOT USE THIS DRAWING FOR LOCATION OF CAST IN PLACE ANCHORS.

LTR	DESCRIPTION	DATE	APPROVED
0			

REVISIONS

APPLICABLE JOB NO(S). 2125
FRB LANDFILL RNG OFF-SPEC FLARE

PEI PERENNIAL ENERGY
1375 COUNTY ROAD 8690
WEST PLAINS, MO 65775
www.PerennialEnergy.com

ENGINEERING SIGNATURES
DESIGNED BY: K.WADE DATE: 4/19/24
DRAWN BY: D.SMITH DATE: 4/19/24

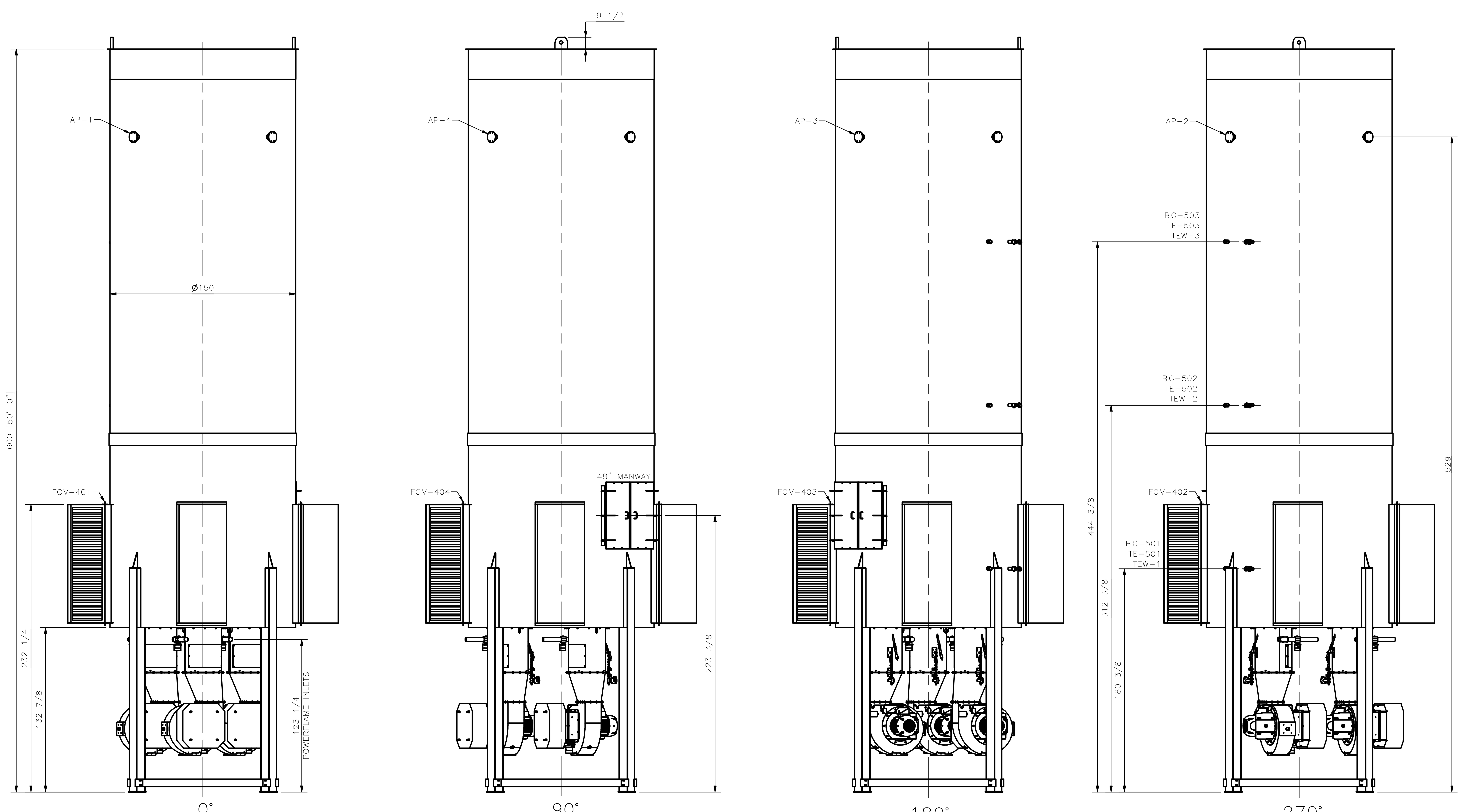
TITLE: FLARE TOP ASSEMBLY 150"OD x 600" TALL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACT ±1/16 .XX ±.03 ANGLES ±0°30

SIZE D
DWG. NO. PA-001-1363

MATERIAL: AS NOTED
SCALE: AS NOTED
FILE NO. PA-001-1363.dwg
SHEET 1 OF 2

4/19/2024 10:07:32 AM D:\ACADF\2101-2150\2125 FRB Landfill RNG Off-Spec Flare\PA-001-1363.dwg D.SMITH



ELEVATION VIEWS
SCALE 1:50

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REDUCED
FROM ORIGINAL
SIZE

LTR	DESCRIPTION	DATE	APPROVED
0			

REVISIONS

APPLICABLE JOB NO(S). 2125
FRB LANDFILL RNG OFF-SPEC FLARE

PERENNIAL ENERGY
1375 COUNTY ROAD 8690
WEST PLAINS, MO 65775
www.PerennialEnergy.com

ENGINEERING SIGNATURES
DESIGNED BY: K.WADE DATE: 4/19/24
DRAWN BY: D.SMITH DATE: 4/19/24

TITLE:
FLARE TOP ASSEMBLY
150"OD x 600" TALL

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
FRACT ±1/16 .XX ±.03 ANGLES ±0°30

SIZE D
DWG. NO. PA-001-1363

MATERIAL: AS NOTED
SCALE: AS NOTED
FILE NO. PA-001-1363.dwg
SHEET 2 OF 2

Equipment Data Sheet

32.9 MMBTU/H Thermal Oxidizer

Job #	**2126-TOU**
Sheet #	**1** Of **1**
By:	**Kristi Wade**
Date:	**14 May 2024**

Reference Designator or Item # **TOU**

Quantity	1
Manufacturer or Approved Equal	PEI
Model #	FL-108X76-50-TP
Max Heat Rate	32.9 MMBtu/h @ 1,050 Btu/scf HHV
Min Heat Rate	6.58 MMBtu/h @ 1,050 Btu/scf HHV
Turn Down Ratio	5:1
Emissions Compliance Design Criteria NG Supplemental Fuel Burner only	0.024 lb/MMBtu NOx, 1000 PPM CO
Emissions Compliance Design Criteria NG Supplemental Fuel Burner with Process Gas	0.035lb/MMBtu NOx, 0.08 lb/MMBtu CO 0.006 lb/MMBtu VOC
Temperature/Retention Time	1400 Deg F for 0.6 Seconds
Maximum Skin Temperature	250 °F
Inlet Centerline Height	TBD
TOU Shell Height, O.D., Thickness	50', 108" x 76", 3/8", ASTM A-36
Air Entrance Louvers	4 each, Automatic Controls
TOU floor, feet, manway, lift lug	ASTM-A-36
Top Ring & Shield	SS 304L
TOU Insulation	4" Ceramic Fiber
Insulation Attachment	Inconel Studs & Retainers
Insulation Layers	3 ea. - Overlapping
Insulation Density	2" 4 lb/ft^3 and 2" 8 lb/ft^3
Inlet Nozzle Size	10" (Waste Stream 1), 6" (Waste Stream 2), 3" (Natural Gas Stream) ANSI 150# Flange Pattern
TOU Burner Manifold & Associated Parts	304L SS
External Ladder & Fall Arrest Assembly	OSHA §1910.29 (D) (i) & ANSI A14.3 Standards
Manway Opening Size	36" x 36"
TOU Reference Drawings	PA-001-1380, ME-009-0667
TOU Reference Emissions Rule	SCAQMD Rule 1147

COMMENTS or NOTES:

NOX emission rates are exclusive of fixed nitrogen in the fuel or injected in condensate, leachate, or other sources. Design assumes, the gas quality will have less than 2% O2, less than 1500 ppmv of H2S, 0 ppmv NH3, and 0% H. If gas constituents are more than the above, please contact Perennial Energy to discuss options and/or changes to the quoted equipment.

Please note: Mineral based particulates, such as wind-blown dust or silica, can be entrained into the ambient cooling and quenching air or purge air streams and passed into the combustor. As non-combustible matter, they will be passed into the exhaust stream and will be measured as particulate emissions, but are not generated by the combustion process. Additionally, Siloxanes will burn to SiO2. PEI makes no guarantees regarding these particulates, or particulates formed from the combustion of other non-methane constituents in the gas stream.

COMMENTS or NOTES:

NOX emission rates are exclusive of fixed nitrogen in the fuel or injected in condensate, leachate, or other sources.

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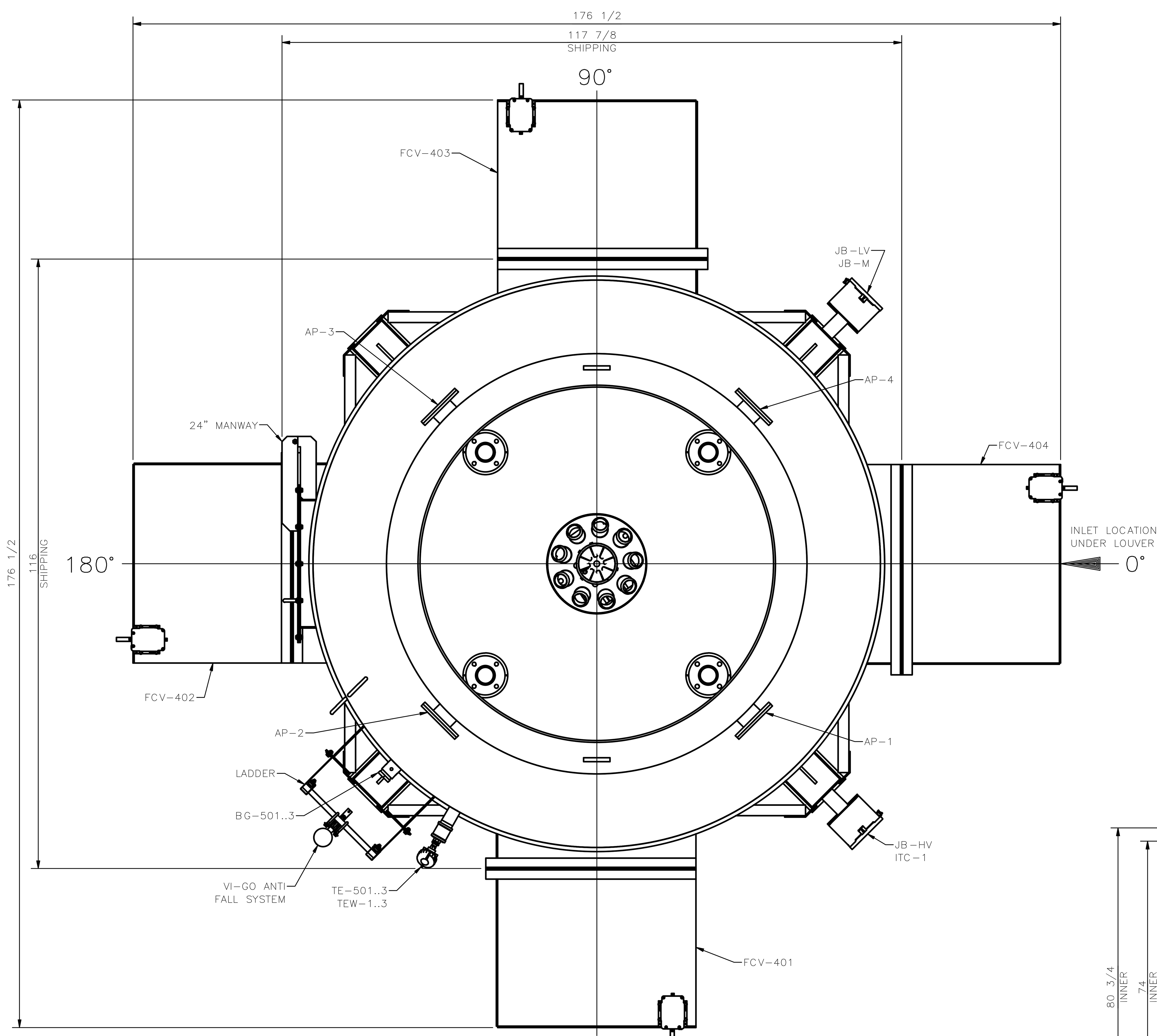
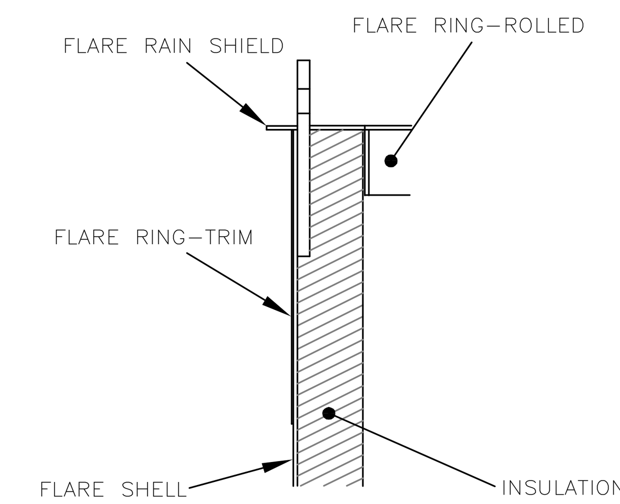
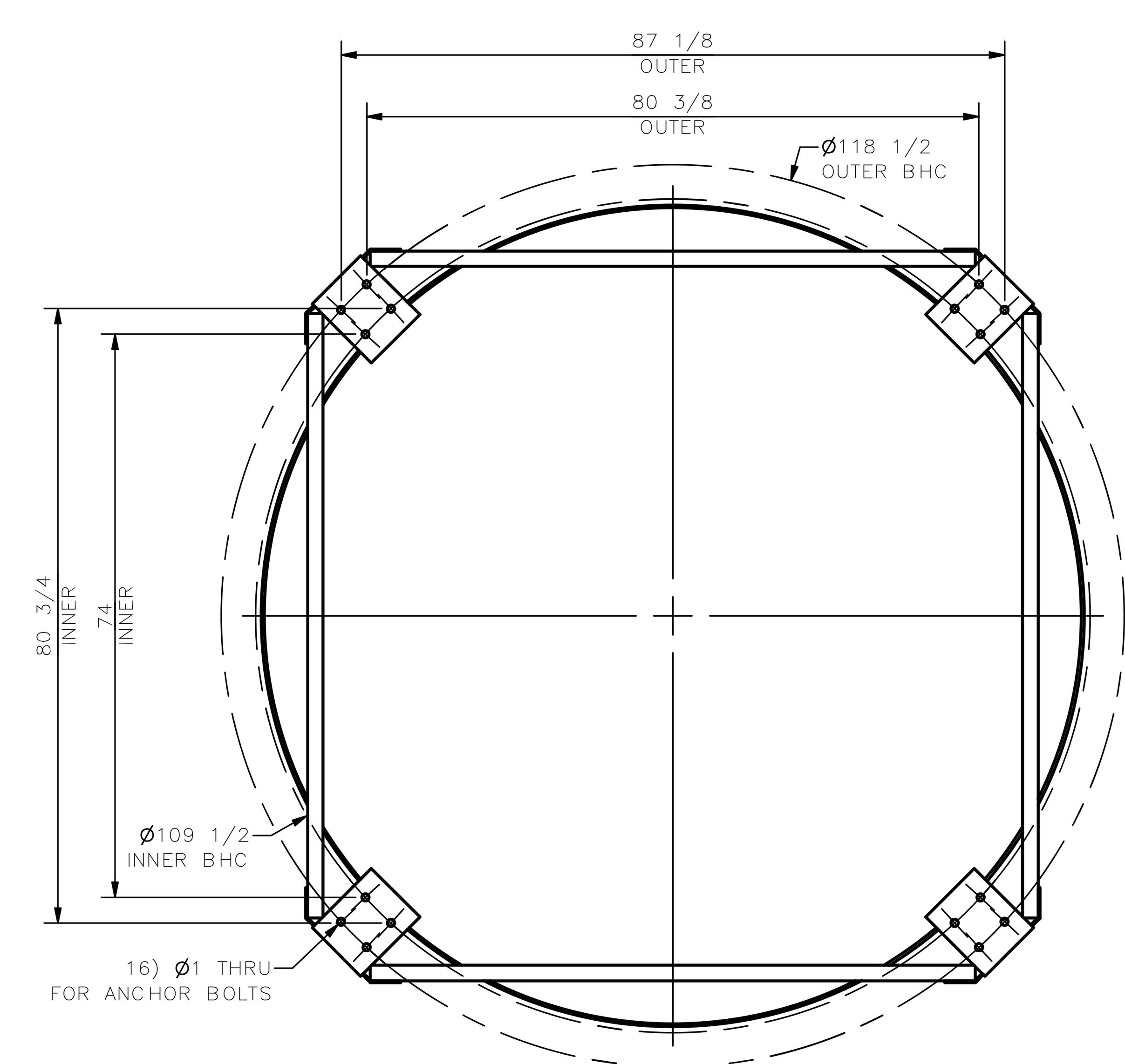
Design assumes, the gas quality will have less than 2% O_2, less than 1500 ppmv of H_2S, 0 ppmv NH_3, and 0% H. If gas constituents are more than the above, please contact Perennial Energy to discuss options and/or changes to the quoted equipment.



PLAN VIEW
SCALE 1:15



TYP TOP CROSS SECTION
SCALE: NTS



FOOT LAYOUT
SCALE 1:20

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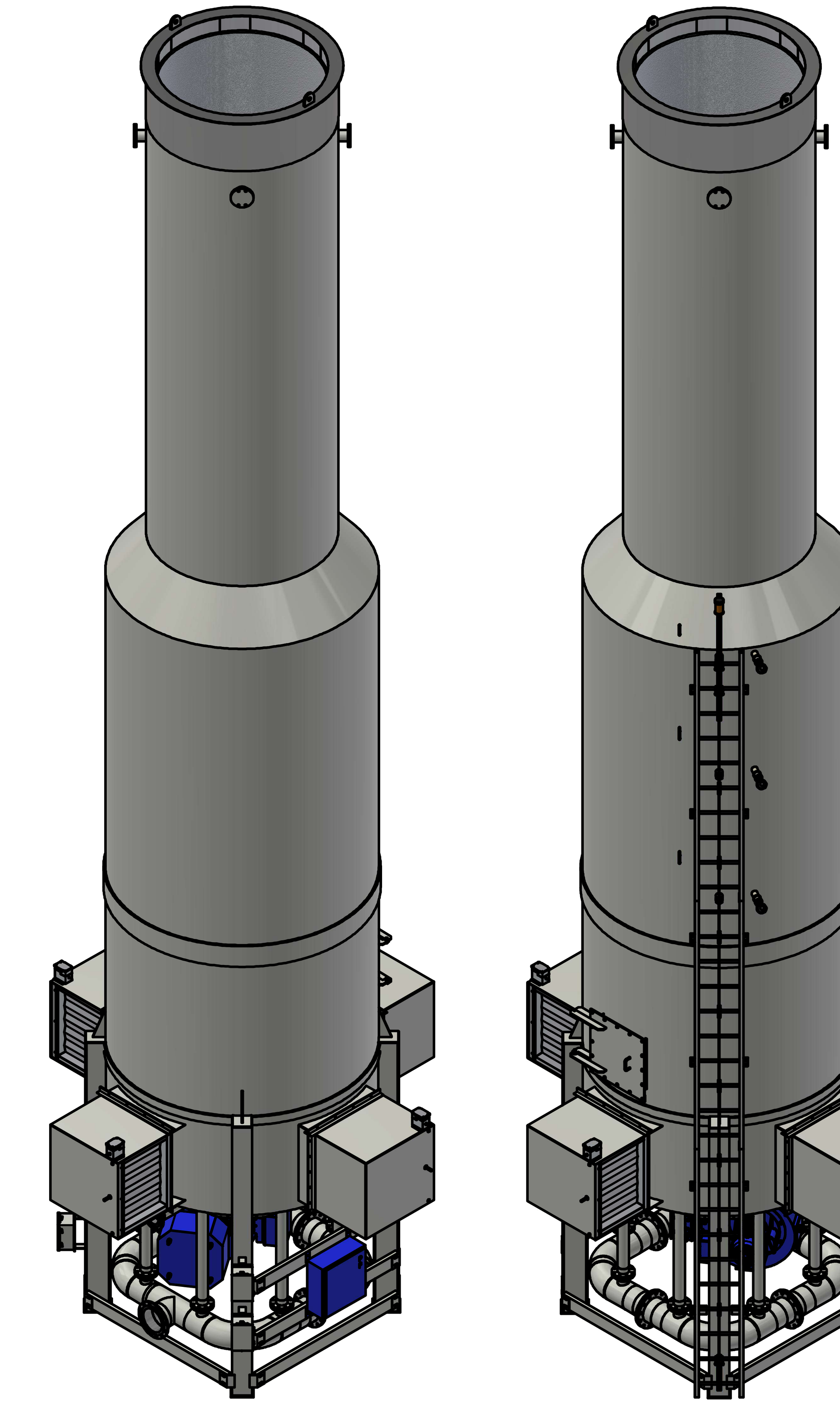

ISOMETRIC VIEWS
SCALE 1:50

REDUCED
FROM ORIGINAL
SIZE

NOTE:
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9. DO NOT USE THIS DRAWING FOR LOCATION OF CAST IN PLACE ANCHORS.

LTR	DESCRIPTION	DATE	APPROVED
0			

REVISIONS

APPLICABLE JOB NO(S). 2126
FRB LANDFILL RNG TOU

PERENNIAL ENERGY
1375 COUNTY ROAD 8690
WEST PLAINS, MO 65775
www.PerennialEnergy.com

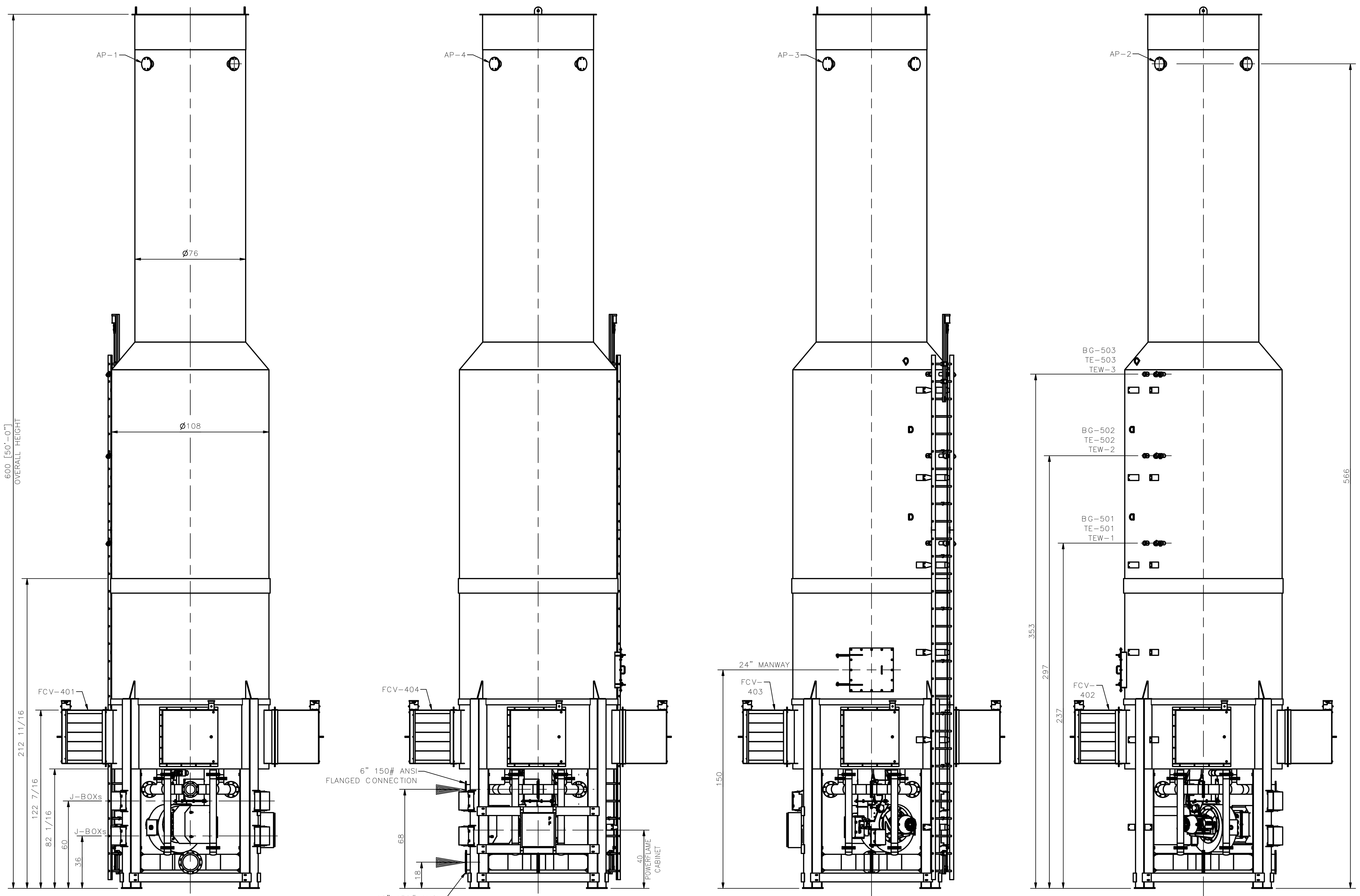
ENGINEERING SIGNATURES
DESIGNED BY: K.WADE DATE: 4/18/24
DRAWN BY: D.SMITH DATE: 4/18/24

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACT ±1/16 .XX ±.03 ANGLES ±0°30

TITLE: TOU TOP ASSEMBLY 108"OD x 600" TALL

SIZE: D
DWG. NO. PA-001-1380

MATERIAL: AS NOTED
SCALE: AS NOTED
FILE NO. PA-001-1380.dwg
SHEET 1 OF 2



ELEVATION VIEWS
SCALE 1:40

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SIZE

LTR	DESCRIPTION	DATE	APPROVED
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REVISIONS

APPLICABLE JOB NO(S). 2126
FRB LANDFILL RNG TOU

PEI PERENNIAL ENERGY
1375 COUNTY ROAD 8690
WEST PLAINS, MO 65775
www.PerennialEnergy.com

ENGINEERING SIGNATURES

	DATE
DESIGNED BY: K.WADE	4/18/24
DRAWN BY: D.SMITH	4/18/24

TITLE: TOU TOP ASSEMBLY
108"OD x 600" TALL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
FRACT ±1/16 .XX ±.03 ANGLES ±0°30

SIZE D DWG. NO. PA-001-1380

MATERIAL: AS NOTED | SCALE: AS NOTED | FILE NO. PA-001-1380.dwg | SHEET 2 OF 2

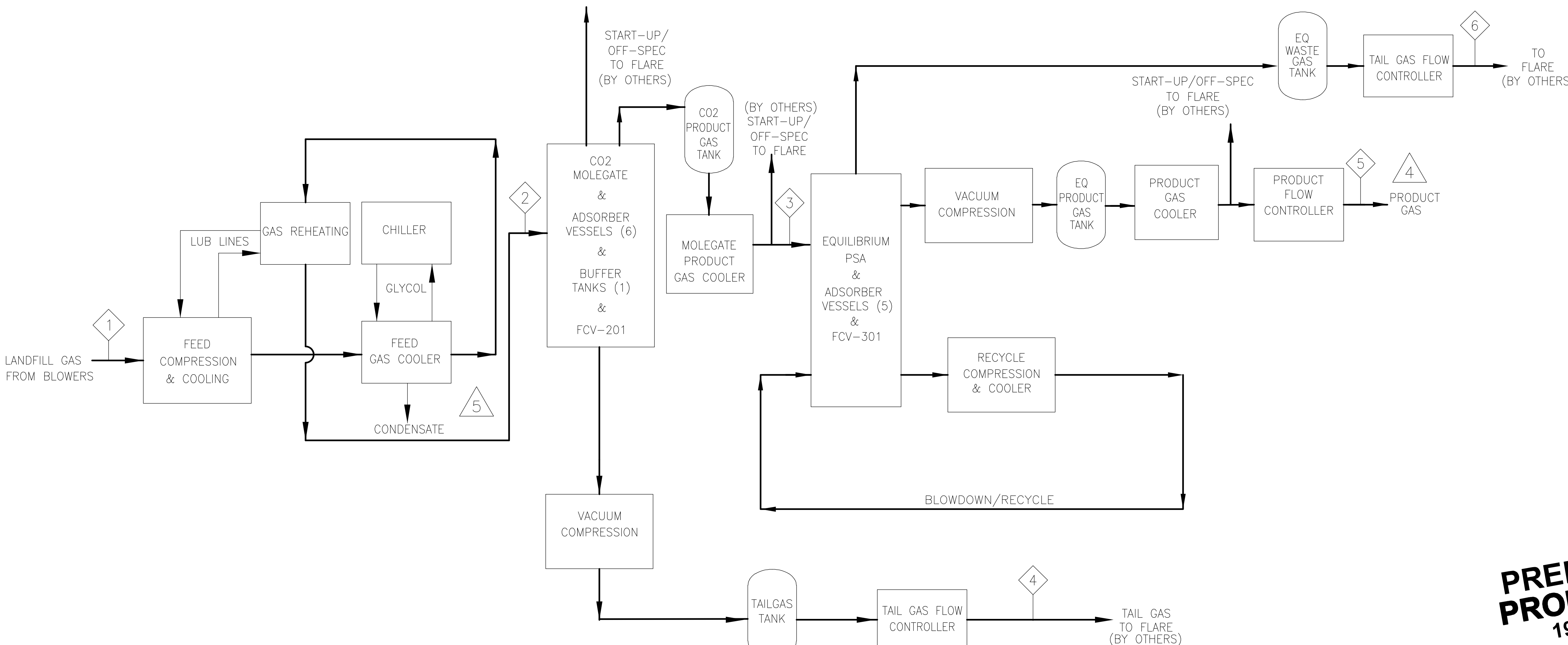
4/18/2024 8:18:07 AM O:\ACADF\2101-2150\2126 FRB Landfill RNG TOU\PA-001-1380.dwg D.SMITH

NOTES: UNLESS OTHERWISE SPECIFIED

1. MAXIMUM FLOWS ARE SHOWN.
   SIMILAR FLOW RATIOS ARE EXPECTED IN TURNDOWN.
2. AVERAGE PRODUCT FLOW FROM THE SYSTEM IS SHOWN.
   SOME FLOW VARIATION IS EXPECTED.
3. TAIL GAS COMPOSITION WILL VARY WITH INLET CONCENTRATIONS AND DURING PLANT STARTUIP WHEN TAIL GAS METHANE CONCENTRATION CAN EXCEED 50% FOR A SHORT PERIOD OF TIME.
4. PRODUCT GAS SPECIFICATION
   TEMPERATURE: 40–120°F
   (3) CONSECUTIVE GC READINGS BEFORE SHUT-IN
   HIGHER HEATING VALUE (HHV): > 970 BTU/SCF
   CARBON DIOXIDE (CO_2) CONTENT: <3.0%
   HYDROGEN SULFIDE (H_2S) CONTENT: <4 PPM (0.25 GR/100SCF)
   TOTAL INERTS ($N_2+O_2+CO_2$) CONTENT: <4.0%
   OXYGEN (O_2) CONTENT: <0.20%
   NITROGEN (N_2) CONTENT: <3.0%
   WATER (H_2O) CONTENT: <7 LBS/MMSCF (<147 PPM)
5. CONDENSATION CONTAINS TRACE CO_2 AND OIL
   CONDENSATE FLOW RATE: ~3,248 GPD
6. FEED COMPRESSOR DISCHARGE DEW POINT: 170°F
7. BDL IN THE MASS BALANCE REPRESENTS BELOW DETECTABLE LIMITS

STREAM	1 FEED GAS (DRY BASIS)	1 FEED GAS (WET BASIS)	2 CO2 PSA FEED	3 CO2 PSA PRODUCT	4 CO2 PSA TAIL GAS	5 EQ PSA PRODUCT	6 EQ PSA TAIL GAS
FLOW (SCFM)		6,000	5,604	3,295	2,309	2,412	883
PRESSURE (PSIG)		0	110	100	2	20	3
PRESSURE (PSIA)		14.67	124.67	114.67	16.67	34.67	17.67
TEMPERATURE °F		100	150	114	180	114	120
C1 (VOL%)	45.00	41.98	44.94	73.38	4.36	96.21	10.96
N2 (VOL%)	13.64	12.72	13.62	23.17	0.00	1.90	81.30
CO2 (VOL%)	40.05	37.36	40.00	1.25	95.29	1.71	0.00
O2 (VOL%)	1.30	1.21	1.30	2.21	0.00	0.18	7.75
H2S (PPM)	85	79	85	<4	206	< 4	< 4
H2O (VOL%)	SATURATED	6.72	0.14	<147 PPM	0.33	<147 PPM	<147 PPM
HHV		424	454	741	44	972	111

REVISIONS				
REV	DESCRIPTION	DATE	DRAWN	APPROVED



PRELIMINARY
PROPRIETARY
19 MAY 2023

GENERAL DATA	
LOCATION	IRVINE, CA
ELEVATION (FEET)	72
BARO PRESSURE (PSIA)	14.67
AMBIENT TEMP (°F)	20 TO 104 °F

APPLICATION	
NEXT ASSY	USED ON

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES

TOLERANCES
DECIMALS .X= ±.1 .XX= ±.02 .XXX= ±.010
ANGLES ±0 30' FRACTIONS ±1/32

DO NOT SCALE DRAWING

CONTRACT NO.

APPROVALS	DATE
DRAWN BAT	05/19/23
CHECKED	
ENGINEERED T.RUSSELL	05/19/23
DESIGN ACTIVITY	
APPROVED	

GUILD ASSOCIATES, INC.
DUBLIN, OHIO 43016

TITLE
PFD
LANDFILL GAS CLEANUP

SIZE D | CODE IDENT. NO. 4X630 | DWG. NO. MGXXX–00009 | REV. 3

SCALE N/A | WEIGHT | SHEET 1 OF 1

DWG NO MGXXX–00009 SH 1 REV 3

Donald Barkley

From:	Tina Darjazanie
Sent:	Friday, February 2, 2024 3:14 PM
To:	Vahe Baboomian
Cc:	James Adams (JAdams@YorkeEngr.com); Donald Barkley
Subject:	FW: FRB- Bowerman RNG TOU Spec Sheet

Vahe,
Please review and let me know if this is different than before and if we need to modify the model and our report.

Yorke Service Areas Include: Air Quality, Storm Water, Hazardous Waste, Industrial Hygiene-Safety, and CEQA Technical Reports.
For a more detailed list: www.YorkeEngr.com/Services.

Tina Darjazanie, MSEnvE | Long Beach Office
Senior Engineer
O: (949) 248-8490 | M: (949) 324-9041
TDarjazanie@YorkeEngr.com | V-card Link

Yorke Engineering, LLC | Corporate Office
31726 Rancho Viejo Road, Suite 218, San Juan Capistrano, CA 92675
Phone: (949) 248-8490 | Fax: (949) 248-8499
www.YorkeEngr.com

Yorke ENGINEERING, LLC

Specializing in Air Quality and EH&S Services

From: Matthew Unger <munger@montaukrenewables.com>
Sent: Friday, February 2, 2024 3:10 PM
To: Tina Darjazanie <tdarjazanie@yorkeengr.com>
Subject: Fwd: FRB- Bowerman RNG TOU Spec Sheet

EXTERNAL EMAIL: This email originated from outside YorkeEngr.com. Please use caution.

See below from PEI.

Matt Unger
Senior Environmental Specialist

Phone: (412) 779-8548
Munger@montaukrenewables.com

5313 Campbells Run Road, Suite 200
Pittsburgh, PA 15205

www.montaukrenewables.com

From: Kristi Wade <kwade@perennialenergy.com>
Sent: Friday, February 2, 2024 5:41:49 PM
To: Matthew Unger <munger@montaukrenewables.com>
Cc: Colby Staggs <cstaggs@perennialenergy.com>
Subject: RE: FRB- Bowerman RNG TOU Spec Sheet

Matt,

If they are referring to the Auxiliary fuel, we have the revised flows below (highlighted). I wanted to send all of the following information in case they needed any clarification on our re-sizing.

	"Start-up Stream" CO2 PSA Tail Gas Stream	***"Steady-State" CO2 PSA Tail Gas Stream***	***"Steady-State" EQ PSA Tail Gas Stream***
Flow (SCFM)	1,100	2,315	885
Pressure (psig)	2.0 to 5.0 psig	2.0	3.0
Temperature (°F)	180	180	120
CH4 %	40 %	4.36 %	10.96 %
CO2 %	59.67 %	95.29 %	0.0 %
N2 %	0.0 %	0.0 %	81.30 %
O2%	0.0 %	0.0 %	7.75 %
H_2S (PPM)	206	206	< 4
H_2O Content	0.33 %	0.33 %	< 147 PPM
Heat Rate at 1,050 Btu/scf HHV	27.7 MMBtu/hr	6.4 MMBtu/hr	6.1 MMBtu/hr

The **Thermal Oxidizer (TOU)** is designed for a total capacity of **32.9 MMBtu/hr** at 1,050 Btu/scf HHV. The TOU is designed to handle the above Start-up Stream from the CO2 PSA System (27.7 MMBtu/hr) and the combined "Steady State" Tail Gas streams from the CO2 PSA and EQ PSA Systems (12.5 MMBtu/hr) as well as an additional ***natural gas*** supplemental fuel stream of up to about **260 scfm**.

Stream Condition Description	**Design TOU Heat Rate**	**Calculated Design Case Supplemental Fuel Usage (Considering Natural Gas at 5 psig)**

Start-up *(Start-up Stream only for ~30 to 45 minutes, 1 hour max)*	**32.9 MMBtu/hr** at 1,050 Btu/scf	- Assume approx. **83 scfm** of natural gas, or minimum turndown of process burner (Approx. **5.2 MMBtu/hr** at 1,050 Btu/scf)
Normal Operation *(Both Steady State streams from the CO2 PSA Tail and EQ PSA Systems)*	**28.9 MMBtu/hr** at 1,050 Btu/scf	- Approx. **130 to 260 scfm** of natural gas at 1600 to 1800 °F - Approx. **8.2 to 16.4 MMBtu/hr** at 1,050 Btu/scf

Calculated Heat Rate at Each Process Condition		
	Start-up	**Normal Operation** *(Steady State)*
Total Heat Rate	**32.9 MMBtu/hr** at 1,050 Btu/scf	**28.9 MMBtu/hr** at 1,050 Btu/scf
Supplemental Fuel Usage (Considering Natural Gas at 5 psig)	**5.2 MMBtu/hr** at 1,050 Btu/scf	**16.4 MMBtu/hr** at 1,050 Btu/scf
CO2 PSA Tail Gas Stream Heat Rate	**27.7 MMBtu/hr** at 1,050 Btu/scf	**6.4 MMBtu/hr** at 1,050 Btu/scf
EQ PSA Tail Gas Stream Heat Rate	N/A	**6.1 MMBtu/hr** at 1,050 Btu/scf

Please let us know if you have any more questions!

Kristi Wade
417-505-7181

From: Matthew Unger <munger@montaukrenewables.com>
Sent: Thursday, February 1, 2024 11:51 AM
To: Kristi Wade <kwade@perennialenergy.com>
Subject: FW: FRB- Bowerman RNG TOU Spec Sheet

Kristi,

Please see the email below from our permitting contractor. Do you have this information on the pilot gas?

Thank you,

Matt Unger
Senior Environmental Specialist

Phone: (412) 779-8548
munger@montaukrenewables.com

5313 Campbells Run Road, Suite 200
Pittsburgh, PA 15205

www.montaukrenewables.com

From: Tina Darjazanie <tdarjazanie@yorkeengr.com>
Sent: Thursday, February 1, 2024 12:41 PM
To: Matthew Unger <munger@montaukrenewables.com>
Cc: Vahe Baboomian <vbaboomian@yorkeengr.com>
Subject: RE: FRB- Bowerman RNG TOU Spec Sheet

Hi Matt,

The previous TOU rated at 24.1 MMBtu/hr had a pilot gas design fuel usage between 106 -199 scfm – where we used the 199 scfm fuel usage rate to calculate emissions. Please see below based on an email from 10/02/2023.

The **Thermal Oxidizer (TOU)** is designed for a total capacity of **24.1 MMBtu/hr**. The TOU is designed to handle the provided tail gas conditions as well as an additional ***natural gas*** supplemental fuel stream of up to about **199 scfm**.

Stream Condition Description	**Design TOU Heat Rate (Considering a HHV of 1,010 Btu/scf)**	**Tail Gas Heat Rate (Considering HHV of 1,010 Btu/scf)**	**Calculated Design Case Supplemental Fuel Usage (Considering Natural Gas at 5 psig)**
Both Streams	24.1 MMBtu/hr	12.0 MMBtu/hr	- About **106 to 199 scfm** of natural gas at 1600 to 1800 °F (or about **6.4 to 12.1 MMBtu/hr** at 1,010 Btu/scf)

Does the revised TOU rated at 32.9 MMBtu/hr have the same pilot gas design fuel usage? If not, can you please provide the updated pilot gas fuel usage?

Thanks,

Yorke Service Areas Include: Air Quality, Storm Water, Hazardous Waste, Industrial Hygiene-Safety, and CEQA Technical Reports.
For a more detailed list: www.YorkeEngr.com/Services.

Tina Darjazanie, MSEnvE | Long Beach Office
Senior Engineer
O: (949) 248-8490 | M: (949) 324-9041
TDarjazanie@YorkeEngr.com | V-card Link

Donald Barkley

From:	Kristi Wade <kwade@perennialenergy.com>
Sent:	Wednesday, April 24, 2024 2:41 PM
To:	Donald Barkley
Cc:	Vahe Baboomian
Subject:	RE: Bowerman RNG - PEI Flare/TOU Specification Clarification
Follow Up Flag:	Flag for follow up
Flag Status:	Flagged

Don,
Yes, I was accounting for the insulation which is 4" thick as well as a shell thickness of 3/8" on each unit. I see now that we had 7/16" thick on the off spec flare. This makes the ID of the flare 141 1/8". Please use this exhaust diameter for the off spec flare.

For the natural gas pilot, I am getting confirmation from the burner vendor for the Btu rating.

Kristi Wade
417-505-7181

From: Donald Barkley <dbarkley@yorkeengr.com>
Sent: Wednesday, April 24, 2024 12:22 PM
To: Kristi Wade <kwade@perennialenergy.com>
Cc: Vahe Baboomian <vbaboomian@yorkeengr.com>
Subject: RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

HI Kristi,

Thanks for the information. Can you clarify how the inside diameters are derived for the 150" OD Flare, with 0.4375 shell thickness, and the 76" OD TOU, with 0.375 shell thickness. Are the inside diameters accounting for insulation? If so, can you please supply the insulation thickness for the TOU and the Flare.

Also, before we run the modeling again, we just wanted to confirm that the natural gas pilot on the Flare is still rated at 100,000 BTU/hr.

Thanks,
Don

Don Barkley, BSMechE, PE | San Juan Capistrano Office
Senior Engineer
O: (949) 248-8490 | M: (949) 426-4943
DBarkley@YorkeEngr.com | V-card Link

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Phone: (949) 248-8490 | Fax: (949) 248-8499
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Yorke
ENGINEERING, LLC

Specializing in Air Quality and EH&S Services

From: Kristi Wade <kwade@perennialenergy.com>
Sent: Tuesday, April 23, 2024 2:22 PM
To: Vahe Baboomian <vbaboomian@yorkeengr.com>; Colby Staggs <cstaggs@perennialenergy.com>; Brad Alexander <balexander@perennialenergy.com>
Cc: Matthew Unger <Munger@montaukrenewables.com>; Donald Barkley <dbarkley@yorkeengr.com>; James Adams <jadams@yorkeengr.com>
Subject: RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

EXTERNAL EMAIL: This email originated from outside YorkeEngr.com. Please use caution.

Vahe,
One modification to my response below. Please change the natural gas consumption on the TOU to a **maximum of 280 SCFM**.

Thank you!

Kristi Wade
417-505-7181

From: Kristi Wade
Sent: Tuesday, April 23, 2024 3:52 PM
To: 'Vahe Baboomian' <vbaboomian@yorkeengr.com>; Colby Staggs <cstaggs@perennialenergy.com>; Brad Alexander <balexander@perennialenergy.com>
Cc: Matthew Unger <Munger@montaukrenewables.com>; Donald Barkley <dbarkley@yorkeengr.com>; James Adams <jadams@yorkeengr.com>
Subject: RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

Vahe,
See answers below in red. Please let me know if you have any questions.

Kristi Wade
417-505-7181

From: Vahe Baboomian <vbaboomian@yorkeengr.com>
Sent: Monday, April 22, 2024 3:00 PM
To: Kristi Wade <kwade@perennialenergy.com>
Cc: Matthew Unger <Munger@montaukrenewables.com>; Donald Barkley <dbarkley@yorkeengr.com>; James Adams <jadams@yorkeengr.com>
Subject: Bowerman RNG - PEI Flare/TOU Specification Clarification

Hello Kristi,

Can you please provide us with the following information for the most recent Flare and TOU revision. Also, can you please confirm if the process flow diagram will be updated due to the Flare/TOU revisions – namely the flow rates through streams A and B?

Flare:

- Exhaust temperature and exhaust flow rate (in acfm) at the exhaust point; 150,000 acfm @ 1018 deg F
- Please confirm if the new Flare will have an exhaust height of 50 feet. Confirmed. The flare height is 50 ft overall.
  Please note the exhaust diameter (ID of flare) is 141 ¼" since the OD of the shell is 150".

TOU

- Exhaust temperature and exhaust flow rate (in acfm) at the exhaust point; 39,000 acfm @ 1000 deg F
- Please confirm if the new TOU will have an exhaust diameter of 76"; The OD of the TOU is 76", which makes the exhaust diameter (ID) 67 ¼".
- Supplemental fuel (natural gas) flow rate – we currently have 260 scfm on file. Has this changed with the newest revision? 260 SCFM of natural gas is correct for the TOU.

Thank you,
Vahe

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Vahe Baboomian, Ph.D. | San Juan Capistrano Office
Scientist
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VBaboomian@YorkeEngr.com | V-card Link

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Vahe Baboomian

From:	Kristi Wade <kwade@perennialenergy.com>
Sent:	Thursday, April 25, 2024 3:23 PM
To:	Vahe Baboomian; Matthew Unger
Cc:	Donald Barkley; Tina Darjazanie
Subject:	RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

Vahe,
Yes, you can use the conservative estimate with a continuous pilot at 100,000 Btu/hr.

Kristi Wade
417-505-7181

From: Vahe Baboomian <vbaboomian@yorkeengr.com>
Sent: Thursday, April 25, 2024 3:33 PM
To: Matthew Unger <Munger@montaukrenewables.com>; Kristi Wade <kwade@perennialenergy.com>
Cc: Donald Barkley <dbarkley@yorkeengr.com>; Tina Darjazanie <tdarjazanie@yorkeengr.com>
Subject: RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

Hi Matt,

Yes, I was going to assume continuous operation as a conservative estimate. Just wanted to confirm the BTU/hr rating hasn't changed since there have been subtle differences in the latest flare and TOU design that need to be updated in the model.

Best,
Vahe

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www.YorkeEngr.com

Yorke ENGINEERING, LLC

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From: Matthew Unger <munger@montaukrenewables.com>
Sent: Thursday, April 25, 2024 1:27 PM

To: Vahe Baboomian <vbaboomian@yorkeengr.com>; Kristi Wade <kwade@perennialenergy.com>
Cc: Donald Barkley <dbarkley@yorkeengr.com>; Tina Darjazanie <tdarjazanie@yorkeengr.com>
Subject: Re: Bowerman RNG - PEI Flare/TOU Specification Clarification

To not delay the permit, could we assume continuous pilot as worst case scenario ?

Matt Unger
Southern Regional Environmental Manager

Phone: (412) 779-8548
Munger@montaukrenewables.com

5313 Campbells Run Road, Suite 200
Pittsburgh, PA 15205

www.montaukrenewables.com

From: Vahe Baboomian <vbaboomian@yorkeengr.com>
Sent: Thursday, April 25, 2024 4:25:47 PM
To: Kristi Wade <kwade@perennialenergy.com>
Cc: Donald Barkley <dbarkley@yorkeengr.com>; Tina Darjazanie <tdarjazanie@yorkeengr.com>; Matthew Unger <munger@montaukrenewables.com>
Subject: RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

Hi Kristi,

Yes, we need confirmation on the pilot gas BTU/hr rating since we need to calculate the hourly and yearly emissions that come from the pilot gas.

Thanks,
Vahe

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From: Kristi Wade <kwade@perennialenergy.com>
Sent: Thursday, April 25, 2024 12:42 PM
To: Vahe Baboomian <vbaboomian@yorkeengr.com>
Cc: Donald Barkley <dbarkley@yorkeengr.com>; Tina Darjazanie <tdarjazanie@yorkeengr.com>; Matthew Unger <Munger@montaukrenewables.com>
Subject: RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

Nothing back from them yet. I will let you know as soon as they respond.

Are you just needing the BTU/hr rating? There have been discussions whether we needed a continuous pilot or not. Will this make a difference in your modeling results?

Kristi Wade
417-505-7181

From: Vahe Baboomian <vbaboomian@yorkeengr.com>
Sent: Thursday, April 25, 2024 12:56 PM
To: Kristi Wade <kwade@perennialenergy.com>
Cc: Donald Barkley <dbarkley@yorkeengr.com>; Tina Darjazanie <tdarjazanie@yorkeengr.com>; Matthew Unger <Munger@montaukrenewables.com>
Subject: RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

Hi Kristi,

Any updates on confirming if the natural gas pilot on the Flare is still rated at 100,000 BTU/hr? We need this confirmed to finalize our modeling results.

Vahe Baboomian

From: Kristi Wade <kwade@perennialenergy.com>
Sent: Wednesday, April 24, 2024 2:41 PM
To: Donald Barkley
Cc: Vahe Baboomian
Subject: RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

Follow Up Flag: Flag for follow up
Flag Status: Flagged

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Don,
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Also, before we run the modeling again, we just wanted to confirm that the natural gas pilot on the Flare is still rated at 100,000 BTU/hr.

Thanks,
Don

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Don Barkley, BSMechE, PE | San Juan Capistrano Office
Senior Engineer
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DBarkley@YorkeEngr.com | V-card Link

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From: Kristi Wade <kwade@perennialenergy.com>
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One modification to my response below. Please change the natural gas consumption on the TOU to a **maximum of 280 SCFM**.

Thank you!

Kristi Wade
417-505-7181

From: Kristi Wade
Sent: Tuesday, April 23, 2024 3:52 PM
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Cc: Matthew Unger <Munger@montaukrenewables.com>; Donald Barkley <dbarkley@yorkeengr.com>; James Adams <jadams@yorkeengr.com>
Subject: RE: Bowerman RNG - PEI Flare/TOU Specification Clarification

Vahe,
See answers below in red. Please let me know if you have any questions.

Kristi Wade
417-505-7181

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To: Kristi Wade <kwade@perennialenergy.com>
Cc: Matthew Unger <Munger@montaukrenewables.com>; Donald Barkley <dbarkley@yorkeengr.com>; James Adams <jadams@yorkeengr.com>
Subject: Bowerman RNG - PEI Flare/TOU Specification Clarification

Hello Kristi,

Can you please provide us with the following information for the most recent Flare and TOU revision. Also, can you please confirm if the process flow diagram will be updated due to the Flare/TOU revisions – namely the flow rates through streams A and B?

Flare:

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- Please confirm if the new Flare will have an exhaust height of 50 feet. Confirmed. The flare height is 50 ft overall.

  Please note the exhaust diameter (ID of flare) is 141 ¼" since the OD of the shell is 150".

TOU

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- Please confirm if the new TOU will have an exhaust diameter of 76"; The OD of the TOU is 76", which makes the exhaust diameter (ID) 67 ¼".
- Supplemental fuel (natural gas) flow rate – we currently have 260 scfm on file. Has this changed with the newest revision? ~~260 SCFM of natural gas is correct for the TOU.~~

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DG150

GAS ENGINE TECHNICAL DATA

CATERPILLAR®

ENGINE SPEED (rpm):	1800	RATING STRATEGY:	EMERGENCY
COMPRESSION RATIO:	10.5	PACKAGE TYPE:	WITH RADIATOR
AFTERCOOLER TYPE:	ATAAC	RATING LEVEL:	STANDBY
INLET MANIFOLD AIR TEMP (°F):	131	FUEL:	NAT GAS
JACKET WATER OUTLET (°F):	176	FUEL SYSTEM:	LPG IMPCO
ASPIRATION:	TA		WITH AIR FUEL RATIO CONTROL
COOLING SYSTEM:	JW, OC, AC	FUEL PRESSURE RANGE(psig):	0.3-0.4
CONTROL SYSTEM:	EIS	FUEL METHANE NUMBER:	85
EXHAUST MANIFOLD:	DRY	FUEL LHV (Btu/scf):	905
COMBUSTION:	INTEGRATED CATALYST	ALTITUDE CAPABILITY AT 79°F INLET AIR TEMP. (ft):	2152
FAN POWER (bhp):	13	POWER FACTOR:	0.8
		VOLTAGE(V):	208-600

RATING		NOTES	LOAD	100%	75%	50%
PACKAGE POWER	(WITH FAN)	(1)(2)	ekW	150	113	75
PACKAGE POWER	(WITH FAN)	(1)(2)	kVA	188	140	94
ENGINE POWER	(WITHOUT FAN)	(2)	bhp	253	190	127
GENERATOR EFFICIENCY		(1)	%	83.8	85.4	88.8
PACKAGE EFFICIENCY(@ 1.0 Power Factor)	(ISO 3046/1)	(3)	%	29.6	27.8	28.3
THERMAL EFFICIENCY		(4)	%	44.9	48.4	48.6
TOTAL EFFICIENCY (@ 1.0 Power Factor)		(5)	%	74.5	76.2	76.9

ENGINE DATA						
PACKAGE FUEL CONSUMPTION	(ISO 3046/1)	(6)	Btu/ekW-hr	11512	12253	12046
PACKAGE FUEL CONSUMPTION	(NOMINAL)	(6)	Btu/ekW-hr	11512	12253	12046
ENGINE FUEL CONSUMPTION	(NOMINAL)	(6)	Btu/bhp-hr	6813	7252	7132
AIR FLOW (77°F, 14.7 psia)	(WET)	(7)(8)	ft3/min	320	237	170
AIR FLOW	(WET)	(7)(8)	lb/hr	1417	1049	754
FUEL FLOW (60°F, 14.7 psia)			scfm	32	25	17
COMPRESSOR OUT PRESSURE			in Hg(abs)	88.2	73.6	62.5
COMPRESSOR OUT TEMPERATURE			°F	303	228	163
AFTERCOOLER AIR OUT TEMPERATURE			°F	130	86	82
INLET MAN. PRESSURE		(9)	in Hg(abs)	76.3	62.0	51.4
INLET MAN. TEMPERATURE	(MEASURED IN PLENUM)	(10)	°F	130	86	82
TIMING		(11)	°BTDC	16	20	26
EXHAUST TEMPERATURE - ENGINE OUTLET		(12)	°F	1304	1221	1110
EXHAUST GAS FLOW (@engine outlet temp, 14.5 psia)	(WET)	(8)(13)	ft3/min	1177	836	556
EXHAUST GAS MASS FLOW	(WET)	(8)(13)	lb/hr	1504	1119	799

REGULATORY INFORMATION							
AGENCY	TIER/STAGE	REGULATION	LOCALITY		MAX LIMITS	YEAR IN	YEAR OUT
EPA		S.I. STATIONARY EMERGENCY - NATURAL GAS	U.S. (EXCL CALIF)	(14)	g/bhp-hr - NOx: 2.0 CO: 4.0 VOC: 1	2011	----

ENERGY BALANCE DATA						
LHV INPUT		(15)	Btu/min	28781	22974	15064
HEAT REJECTION TO JACKET WATER (JW)		(16)(22)	Btu/min	4896	3639	2427
HEAT REJECTION TO ATMOSPHERE	(INCLUDES GENERATOR)	(17)	Btu/min	4527	3391	2045
HEAT REJECTION TO LUBE OIL (OC)		(18)(23)	Btu/min	470	518	357
HEAT REJECTION TO EXHAUST (LHV TO 77°F)		(19)(20)	Btu/min	8661	7774	5123
HEAT REJECTION TO EXHAUST (LHV TO 248°F)		(19)	Btu/min	7528	6938	4525
HEAT REJECTION TO AFTERCOOLER (AC)		(21)(23)	Btu/min	1126	685	277

CONDITIONS AND DEFINITIONS

Engine rating obtained and presented in accordance with ISO 3046/1. (Standard reference conditions of 77°F, 29.60 in Hg barometric pressure.) No overload permitted at rating shown. Consult the altitude deration factor chart for applications that exceed the rated altitude or temperature.

Emission levels are at the Caterpillar provided catalyst outlet. Values are based on engine operation at steady state conditions. Tolerances specified are dependent upon fuel quality. Fuel methane number cannot vary more than ± 3.

For notes information consult page three.

FUEL USAGE GUIDE

CAT METHANE NUMBER	**84**	**100**
SET POINT TIMING	16	16
DERATION FACTOR	1	1

ALTITUDE DERATION FACTORS AT RATED SPEED

INLET AIR TEMP °F / ALTITUDE (FEET ABOVE SEA LEVEL)

INLET AIR TEMP °F	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1	1	0.99	0.97	0.95	0.93	0.90	0.88	0.86	0.83	0.81	0.79	0.77
120	1	1	1	0.98	0.96	0.93	0.91	0.89	0.87	0.84	0.82	0.80	0.77
110	1	1	1	0.98	0.96	0.93	0.91	0.89	0.87	0.84	0.82	0.80	0.77
100	1	1	1	0.98	0.96	0.93	0.91	0.89	0.87	0.84	0.82	0.80	0.77
90	1	1	1	0.98	0.96	0.93	0.91	0.89	0.87	0.84	0.82	0.80	0.77
80	1	1	1	0.98	0.96	0.93	0.91	0.89	0.87	0.84	0.82	0.80	0.77
70	1	1	1	0.98	0.96	0.93	0.91	0.89	0.87	0.84	0.82	0.80	0.77
60	1	1	1	0.98	0.96	0.93	0.91	0.89	0.87	0.84	0.82	0.80	0.77
50	1	1	1	0.98	0.96	0.93	0.91	0.89	0.87	0.84	0.82	0.80	0.77

AFTERCOOLER HEAT REJECTION FACTORS (ACHRF)

INLET AIR TEMP °F / ALTITUDE (FEET ABOVE SEA LEVEL)

INLET AIR TEMP °F	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000
130	1.34	1.39	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
120	1.25	1.31	1.36	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
110	1.17	1.22	1.27	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28
100	1.09	1.14	1.19	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
90	1	1.05	1.10	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
80	1	1	1.02	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03	1.03
70	1	1	1	1	1	1	1	1	1	1	1	1	1
60	1	1	1	1	1	1	1	1	1	1	1	1	1
50	1	1	1	1	1	1	1	1	1	1	1	1	1

FUEL USAGE GUIDE:

This table shows the derate factor and full load set point timing required for a given fuel. Note that deration and set point timing adjustment may be required as the methane number decreases. Methane number is a scale to measure detonation characteristics of various fuels. The methane number of a fuel is determined by using the Caterpillar methane number calculation.

ALTITUDE DERATION FACTORS:

This table shows the deration required for various air inlet temperatures and altitudes. Use this information along with the fuel usage guide chart to help determine actual engine power for your site. The derate factors shown assume a specific air-to-core temperature rise and zero additional air flow restriction on the standard packaged radiator. Refer to TMI Systems Data for fan air flow and air-to-core temperature rise values. Increased fan airflow restriction or a different air-to-core rise value requires a Special Rating Request to determine actual engine power at your site. Additional rating may be available with a larger, custom radiator.

ACTUAL ENGINE RATING:

To determine the actual rating of the engine at site conditions, one must consider separately, limitations due to fuel characteristics and air system limitations. The Fuel Usage Guide deration establishes fuel limitations. The Altitude/ Temperature deration factors and RPC(reference the Caterpillar Methane Program) establish air system limitations. RPC comes into play when the Altitude/Temperature deration is less than 1.0 (100%). Under this condition, add the two factors together. When the site conditions do not require an Altitude/Temperature derate (factor is 1.0), it is assumed the turbocharger has sufficient capability to overcome the low fuel relative power, and RPC is ignored. To determine the actual power available, take the lowest rating between 1) and 2).

1) Fuel Usage Guide Deration
2) 1 - ((1 - Altitude / Temperature Deration) +(1 - RPC))

AFTERCOOLER HEAT REJECTION FACTORS(ACHRF):

To maintain a constant air inlet manifold temperature, as the inlet air temperature goes up, so must the heat rejection. As altitude increases, the turbocharger must work harder to overcome the lower atmospheric pressure. This increases the amount of heat that must be removed from the inlet air by the aftercooler. Use the aftercooler heat rejection factor (ACHRF) to adjust for inlet air temp and altitude conditions. See note (22) for application of this factor in calculating the heat exchanger sizing criteria. Failure to properly account for these factors could result in detonation and cause the engine to shutdown or fail.

NOTES:

1. Generator efficiencies, power factor, and voltage are based on standard generator. [Package Power (ekW) is calculated as: (Engine Power (bkW) - Fan Power (bkW)) x Generator Efficiency], [Package Power (kVA) is calculated as: (Engine Power (bkW) - Fan Power (bkw)) x Generator Efficiency / Power Factor]
2. Rating is with one engine driven jacket water pump. Tolerance is (+)3, (-)0% of full load.
3. Package Efficiency published in accordance with ISO 3046/1, based on a 1.0 power factor.
4. Thermal Efficiency is calculated based on energy recovery from the jacket water, lube oil, and exhaust to 248°F with engine operation at ISO 3046/1 Package Efficiency, and assumes unburned fuel is converted in an oxidation catalyst.
5. Total efficiency is calculated as: Package Efficiency + Thermal Efficiency. Tolerance is ±10% of full load data.
6. ISO 3046/1 Package fuel consumption tolerance is (+)5, (-)0% at the specified power factor. Nominal package and engine fuel consumption tolerance is ± 5.0% of full load data at the specified power factor.
7. Air flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of ± 5 %.
8. Inlet and Exhaust Restrictions must not exceed A&I limits based on full load flow rates from the standard technical data sheet.
9. Inlet manifold pressure is a nominal value with a tolerance of ± 5 %.
10. Inlet manifold temperature is a set point value.
11. Timing indicated is for use with the minimum fuel methane number specified. Consult the appropriate fuel usage guide for timing at other methane numbers.
12. Exhaust temperature is a nominal value with a tolerance of (+)63°F, (-)54°F.
13. Exhaust flow value is on a 'wet' basis. Flow is a nominal value with a tolerance of ± 6 %.
14. Gaseous emissions data measurements are consistent with those described in EPA 40 CFR PART 60 SUBPART JJJJ and ISO 8178 for measuring VOC, CO, and NOx. Gaseous emissions values are weighted cycle averages and are in compliance with the stationary regulations.
15. LHV rate tolerance is ± 5.0%.
16. Heat rejection to jacket water value displayed includes heat to jacket water alone. Value is based on treated water. Tolerance is ± 10% of full load data.
17. Heat rejection to atmosphere based on treated water. Tolerance is ± 50% of full load data.
18. Lube oil heat rate based on treated water. Tolerance is ± 20% of full load data.
19. Exhaust heat rate based on treated water. Tolerance is ± 10% of full load data.
20. Heat rejection to exhaust (LHV to 77°F) value shown includes unburned fuel and is not intended to be used for sizing or recovery calculations.
21. Heat rejection to aftercooler tolerance is ±5% of full load data.
22. Total Jacket Water Circuit heat rejection is calculated as: JW x 1.1. Heat exchanger sizing criterion is maximum circuit heat rejection at site conditions, with applied tolerances. A cooling system safety factor may be multiplied by the total circuit heat rejection to provide additional margin.
23. Total Lube Oil Cooler Circuit heat rejection is calculated as: OC x 1.2. Heat exchanger sizing criterion is maximum circuit heat rejection at site conditions, with applied tolerances. A cooling system safety factor may be multiplied by the total circuit heat rejection to provide additional margin.
24. Total Aftercooler Circuit heat rejection is calculated as: AC x ACHRF x 1.05. Heat exchanger sizing criterion is maximum circuit heat rejection at site conditions, with applied tolerances. A cooling system safety factor may be multiplied by the total circuit heat rejection to provide additional margin.

Image shown may not reflect actual configuration.

Sound Attenuated and Weather Protective Enclosures

DG100 – DG200 (100 – 200 ekW Gas)

FEATURES

Robust/Highly Corrosion Resistant Construction

- Factory installed on skid base
- Caterpillar white/yellow paint
- Environmentally friendly, polyester powder baked paint
- 18 gauge Steel, 12 gauge 5052 grade Aluminum
- Zinc plated fasteners
- Stainless steel hinges
- Internally mounted exhaust silencing system
- Designed and tested to comply with UL 2200 Listed generator set package
- Comply with ASCE /SEI 7 for Wind Loads up to 100 (Steel) and 150 mph (Aluminum)
- Optional seismic certification offered
- Compression door latches providing solid door seal with door stopper

Excellent Access

- Large cable entry area for installation ease
- Accommodates side mounted single or multiple breakers
- Single door on left & rear side of the package
- Dual doors on right hand side
- Doors vertically hinged allow 180° opening rotation
- Doors capable of lift off at 90° opening rotation
- For non-routine service access are removable panels
- Standard Lube oil drain valve, coolant drain/valve piped to the exterior of the skid base
- Radiator fill cover

Security and Safety

- Lockable (keyed or padlock) doors which give full access to control panel and breaker
- Cooling fan and battery charging alternator fully guarded
- Oil fill and battery can only be reached via lockable access
- Optional externally mounted emergency stop button
- Designed for spreader bar lifting to ensure safety
- Stub-up area is rodent proof

Options

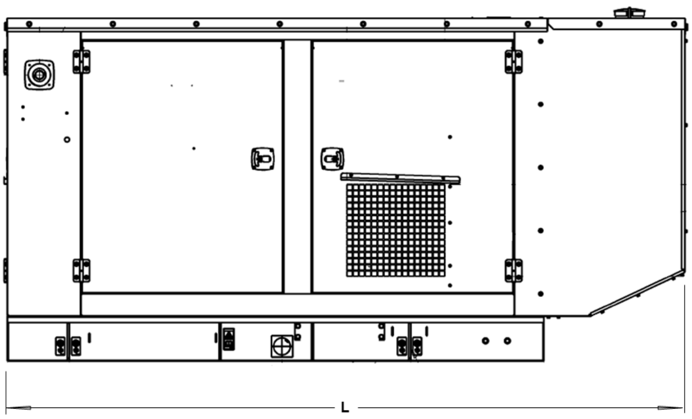
- Skid base compatible
- DC lighting package (Optional)

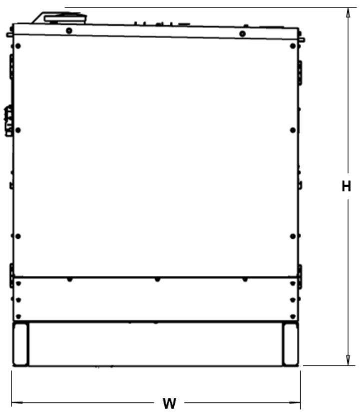
Weights & Dimensions

A. Package Weights and Dimensions

Enclosure Type	Genset Model	Length "L"		Width "W"		Height "H"		Package Weight	
		mm	in	mm	in	mm	in	kg	lb
Open Set on Skid Base (Wide)	DG100	2442	96	1297	51	1449	57	1364	3007
	DG125	2442	96	1297	51	1449	57	1464	3226
	DG150	2892	114	1396	55	1734	68	1657	3653
	DG175	2985	117.5	1600	63	1789	71	1780	3924
	DG200	2985	117.5	1600	63	1789	71	1780	3924
Sound Attenuated Level-2 Enclosure on Skid Base (Steel)	DG100	3100	122	1230	48	1606	63	1700	3748
	DG125	3100	122	1230	48	1606	63	1800	3968
	DG150	3348	132	1445	57	1875	74	2051	4522
	DG175	3624	143	1626	64	1987	78	2302	5075
	DG200	3624	143	1626	64	1987	78	2302	5075
Sound Attenuated Level-3 Enclosure on Skid Base (Steel)*	DG100	3100	122	1230	48	1606	63	1764	3889
	DG125	3100	122	1230	48	1606	63	1864	4109
	DG150	3348	132	1445	57	1875	74	2085	4597
	DG175*	3624	143	1626	64	1987	78	–	–
	DG200*	3624	143	1626	64	1987	78	–	–
Sound Attenuated Level-2 Enclosure on Skid Base (Aluminum)	DG100	3100	122	1230	48	1606	63	1579	3481
	DG125	3100	122	1230	48	1606	63	1679	3701
	DG150	3348	132	1445	57	1875	74	1906	4202
	DG175	3624	143	1626	64	1987	78	2145	4729
	DG200	3624	143	1626	64	1987	78	2145	4729
Sound Attenuated Level-3 Enclosure on Skid Base (Aluminum)*	DG100	3100	122	1230	48	1606	63	1654	3646
	DG125	3100	122	1230	48	1606	63	1754	3866
	DG150	3348	132	1445	57	1875	74	1938	4273
	DG175*	3624	143	1626	64	1987	78	–	–
	DG200*	3624	143	1626	64	1987	78	–	–
Weather Protective Enclosure on Skid Base (Steel)	DG100	2442	96	1297	51	1449	57	1564	3448
	DG125	2442	96	1297	51	1449	57	1664	3668
	DG150	2892	114	1445	57	1875	74	1919	4231
	DG175	3624	143	1626	64	2027	80	2072	4568
	DG200	3624	143	1626	64	2027	80	2072	4568
Sound Attenuated Level-2 Cold Weather Enclosure on Skid Base (Steel)*	DG100	3100	122	1230	48	1606	63	1710	3769
	DG125	3100	122	1230	48	1606	63	1810	3990
	DG150	3348	132	1445	57	1875	74	2057	4535
	DG175	3624	143	1626	64	1987	78	2332	5141
	DG200	3624	143	1626	64	1987	78	2332	5141
Sound Attenuated Level-3 Cold Weather Enclosure on Skid Base (Steel)	DG100	3100	122	1230	48	1606	63	1772	3906
	DG125	3100	122	1230	48	1606	63	1872	4127
	DG150	3349	132	1446	57	1876	74	2091	4610
	DG175*	3624	143	1626	64	1987	78	–	–
	DG200*	3624	143	1626	64	1987	78	–	–

*Preliminary Data – Subject to change without notice.
Weights include Genset, Enclosure (where applicable)





B. Component Weights to Calculate Package Weights

Standby Ratings/ Genset Models	Wide Skid Base		Sound Attenuated Enclosure (L2) (Steel)		Sound Attenuated Enclosure (L2) (Aluminum)		Weather Protective Enclosure		SA Cold Weather Enclosure (L2)	
ekW	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
100 (DG100)	143	315	336 / 400	741 / 881	215 / 290	474 / 639	200	450	346 / 408	763 / 900
125 (DG125)	143	315	336 / 400	741 / 881	215 / 290	474 / 639	200	450	346 / 408	763 / 900
150 (DG150)*	255	515	394 / 428	869 / 944	249 / 281	549 / 620	262	578	400 / 434	882 / 957
175 (DG175)*	273	602	522 / –	1150 / –	365 / -	804 / –	292	643	470 / –	1036 / –
200 (DG200)*	273	602	522 / –	1150 / -	365 / –	804 / –	292	643	470 / –	1036 / –

*Preliminary Data – Subject to change without notice.

C. Enclosure Sound Pressure Levels (SPL) for Sound Attenuated Steel and Aluminum Enclosures

Standby Ratings/ Genset Models	SPL at 7m (23 ft) at 100% load (L2)
ekW	dBA
100 (DG100)	75
125 (DG125)	75
150 (DG150)	75
175 (DG175)	75
200 (DG200)	75

Standby Ratings / Genset Models	SPL at 7m (23 ft) at 100% load (L3)
ekW	dBA
100 (DG100)	70
125 (DG125)	70
150 (DG150)	70
175 (DG175)	70
200 (DG200)	70

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APPENDIX C – CONSTRUCTION HRA MODELING RESULTS

Model
Cancer Risk
Chronic Risk

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Maximum Cancer Risk by Pollutant at PMI, MEIR, MEIW and Sensitive Receptor
Bowerman RNG Facility - Construction - Elevated Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3174	receptor #	17	receptor #	9
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,314.83	3,730,951.10	431,458.26	3,730,677.33	434,243.77	3,731,189.79
		1-Year Cancer Risk	Contribution (%)	1-Year Cancer Risk	Contribution (%)	1-Year Cancer Risk	Contribution (%)
-	ALL	8.52E-05	100%	4.01E-06	100%	9.39E-07	100.00%
9901	DPM	8.52E-05	100.00%	4.01E-06	100.00%	9.39E-07	100.00%

5/23/2025

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Cancer Risk by Source for All Pollutants Combined at PMI, MEIR, MEIW and Sensitive Receptor
Bowerman RNG Facility - Construction - Elevated Terrain AERMOD Run

Sources	Source Description	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3174	receptor #	17	receptor #	9
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,314.83	3,730,951.10	431,458.26	3,730,677.33	434,243.77	3,731,189.79
		1-Year Cancer Risk	Contribution (%)	1-Year Cancer Risk	Contribution (%)	1-Year Cancer Risk	Contribution (%)
ALL	--	8.52E-05	100%	4.01E-06	100%	9.39E-07	100%
PIPELINE	Pipeline Construction	8.38E-07	0.98%	3.84E-06	95.67%	5.22E-07	55.67%
RNG_FAC	Renewable Natural Gas Facility Construction	8.43E-05	99.02%	1.74E-07	4.33%	4.16E-07	44.33%

 5/23/2025

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Maximum Chronic Hazard Index by Pollutant at PMI, MEIR, MEIW and Sensitive Receptor
Bowerman RNG Facility - Construction - Elevated Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3174	receptor #	17	receptor #	9
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,314.83	3,730,951.10	431,458.26	3,730,677.33	434,243.77	3,731,189.79
		Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)
-	ALL	9.58E-02	100.00%	4.51E-03	100.00%	1.30E-02	100.00%
9901	DPM	9.58E-02	100.00%	4.51E-03	100.00%	1.30E-02	100.00%

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Chronic Hazard Index by Source for All Pollutants Combined at PMI, MEIR, MEIW and Sensitive Receptor
Bowerman RNG Facility - Construction - Elevated Terrain AERMOD Run

Sources	Source Description	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3174	receptor #	17	receptor #	9
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,314.83	3,730,951.10	431,458.26	3,730,677.33	434,243.77	3,731,189.79
		Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)
ALL	--	9.58E-02	100%	4.51E-03	100%	1.30E-02	100%
PIPELINE	Pipeline Construction	9.43E-04	0.98%	4.32E-03	95.67%	7.22E-03	55.66%
RNG_FAC	Renewable Natural Gas Facility Construction	9.49E-02	99.02%	1.95E-04	4.33%	5.75E-03	44.33%

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Maximum Cancer Risk by Pollutant at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Construction - Flat Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3183	receptor #	17	receptor #	3110
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,190	3,730,990	431,458	3,730,677	434,171	3,731,089
		1-Year Cancer Risk	Contribution (%)	1-Year Cancer Risk	Contribution (%)	1-Year Cancer Risk	Contribution (%)
-	ALL	1.38E-04	100%	4.39E-06	100%	2.51E-06	100%
9901	DPM	1.38E-04	100.00%	4.39E-06	100.00%	2.51E-06	100.00%

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Cancer Risk by Source for All Pollutants Combined at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Construction - Flat Terrain AERMOD Run

Sources	Source Description	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3183	receptor #	17	receptor #	3110
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,190	3,730,990	431,458	3,730,677	434,171	3,731,089
		1-Year Cancer Risk	Contribution (%)	1-Year Cancer Risk	Contribution (%)	1-Year Cancer Risk	Contribution (%)
ALL	--	1.38E-04	100%	4.39E-06	100%	2.51E-06	100%
PIPELINE	Pipeline Construction	1.80E-06	1.30%	4.16E-06	94.81%	1.78E-07	7.10%
RNG_FAC	Renewable Natural Gas Facility Construction	1.36E-04	98.70%	2.28E-07	5.19%	2.34E-06	92.90%

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Maximum Chronic Hazard Index by Pollutant at PMI, MEIR, MEIW and Sensitive Receptor
FRB Landfill RNG Facility - Construction - Flat Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3183	receptor #	17	receptor #	3110
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,190	3,730,990	431,458	3,730,677	434,171	3,731,089
		Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)
-	ALL	1.55E-01	100%	4.93E-03	100%	3.48E-02	100%
9901	DPM	1.55E-01	100.00%	4.93E-03	100.00%	3.48E-02	100.00%

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Chronic Hazard Index by Source for All Pollutants Combined at PMI, MEIR, MEIW and Sensitive Receptor
FRB Landfill RNG Facility - Construction - Flat Terrain AERMOD Run

Sources	Source Description	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3183	receptor #	17	receptor #	3110
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,190	3,730,990	431,458	3,730,677	434,171	3,731,089
		Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)
ALL	--	1.55E-01	100%	4.93E-03	100%	3.48E-02	100%
PIPELINE	Pipeline Construction	2.02E-03	1.30%	4.68E-03	94.81%	2.47E-03	7.10%
RNG_FAC	Renewable Natural Gas Facility Construction	1.53E-01	98.70%	2.56E-04	5.19%	3.23E-02	92.90%

APPENDIX D – EMISSION CALCULATIONS FROM OPERATIONS

Facility: Bowerman Power LFG, LLC

Bowerman Power LFG, LLC / FRB
RNG Facility CEQA Operational Emissions

Appendix D Operational Emissions - Thermal Oxidizer Unit

Table D.1 Data (Thermal Oxidizer)

Stream ID[1]	Stream Max Capacity[1] (scfm)	Methane Content in Tail Gas Stream[1] (Vol.%)	Stream Max Capacity[2] (mmBtu/hr)	Stream HHV[3] (mmBtu/mmscf)	Hours per Day	Days per Year	Stream Consumption[4] (mmscf/hr)	Stream Max Consumption[5] (mmscf/yr)
Plant Inlet	6,000	--	--	--	24	365	0.3600	3,153.60
Tail Gas Stream 1	2,309	4.36%	6.34	45.78			0.1385	1,213.61
Tail Gas Stream 2	883	10.96%	6.10	115.08			0.0530	464.10
Supplemental Fuel	280	--	17.64	--			0.0168	147.17
	Normal Operations Total Heat Input (mmBtu/hr)		30.1					
Start-Up TG Stream 1	1,100	40.00%	27.7	420.00			0.0660	--
Start-Up Suppl. Fuel	83	--	5.2	--			0.0050	--
	Start-Up Total Heat Input (mmBtu/hr)		32.9					

[1] Plant Inlet flowrate and Tail Gas Stream 1 and 2 flowrates and methane content from TOU and Flare Gases PFD in Appendix B. Supplemental Fuel flowrate from Perennial.

[2] Tail Gas Stream 1, Tail Gas Stream 2

Stream Max Capacity (mmBtu/hr) = Stream Max Capacity (scfm) x Methane Content in Tail Gas Stream (Vol.%) x 60 / 1,000,000 x NG HHV (mmBtu/mmscf)

NG HHV 1,050 mmBtu/mmscf

Supplemental Fuel

Stream Max Capacity (mmBtu/hr) = Stream Max Capacity (scfm) x 60 / 1,000,000 x NG HHV (mmBtu/mmscf)

[3] Stream HHV (mmBtu/mmscf) = Stream Max Capacity (mmBtu/hr) / (Stream Max Capacity (scfm) x 60 / 1,000,000)

[4] Stream Consumption (mmscf/h) = Stream Max Capacity (scfm) x 60 / 1,000,000

[5] Stream Consumption (mmscf/yr) = Stream Max Capacity (mmscf/hr) x Hours per Day x Days per Year

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Appendix D Operational Emissions - Thermal Oxidizer Unit

Table D.2 Thermal Oxidizer Criteria Pollutant Emission Factors and Emissions

Criteria Pollutant	Plant Inlet (ppmv)	Exhaust Content (ppmv @ 3% O2)	Emission Factor[6] (lb/mmscf)	Emission Factor[7] (lb/mmBtu)	Hourly Emissions[8] (lb/hr)	Daily Emissions[9] (lb/day)	Annual Emissions[10] (lb/yr)
NOx[1]	--	29	--	0.035	1.0528	25.27	9,222.31
CO[2]	--	106	--	0.080	2.4063	57.75	21,079.57
VOC[3]	--	--	--	0.006	0.1805	4.33	1,580.97
SOx, Tail Gas[4]	85	--	14.354	--	5.1673	124.01	--
	60	--	10.132	--	3.6475	87.54	31,952.04
SOx, Supplemental Fuel[4]	--	--	0.60	--	0.0101	0.24	88.30
PM10[5]	--	--	7.5	0.007	0.2149	5.16	1,882.10

[1] NOx emission factor from Rule 1147, Table 2, "Afterburner, Degassing Unit, Thermal Oxidizer, Catalytic Oxidizer or Vapor Incinerator," is 0.024 lb/MMBTU/hr when combusting only natural gas as the supplemental fuel.
The emission limit is proposed to be 0.035 lb NOx/MMBTU, as the BACT/LAER limit for a RNG Processing Plant that burns low-BTU tail gases in addition to the supplemental fuel of natural gas.
[Exhaust Content (ppmv @ 3% O2)]

[2] CO emission factor from equipment specification sheet design criteria. Reference is provided in Appendix B.
The emission limit is proposed to be 0.080 lb NOx/MMBTU, as the BACT/LAER limit for a RNG Processing Plant that burns low-BTU tail gases in addition to the supplemental fuel of natural gas.
[Exhaust Content (ppmv @ 3% O2)]

[3] Proposed BACT/LAER for VOC is the South Coast AQMD BACT/LAER determination for A/N 614468 [Flare I-6 AT OCWR, FRB (Facility ID 69646)].
[Emission Factor (lb/mmBtu)]

[4] Tail Gas
The South Coast AQMD BACT/LAER determination for A/N 614468 requires sulfur content no higher than: 85 ppmv, averaged daily; and 60 ppmv, averaged monthly.
These values are used for the Tail Gas emission calculations.
[Plant Inlet (ppmv)]
Supplemental Fuel
South Coast AQMD Default
[lb/mmscf]

[5] Proposed Emission Factor for PM10 is derived from the South Coast AQMD default emission factor for external combustion.
[Emission Factor (lb/mmBtu)]

[6] SOx, Tail Gas
Emission Factor (lb/mmscf) = Plant Inlet (ppmv) x SOx MW (lb/lbmol) / Molar Volume (scf/lbmol)

SOx MW	64	lb/lbmol
Molar Volume	379	scf/lbmol, @ 60 Deg F

[7] NOx, CO
Emission Factor (lb/mmBtu) = Exhaust Content (ppmv @ 3% O2) x 20.9 / (20.9 - 3) x F-Factor (dscf/mmBtu) x MW / Molar Volume / 1,000,000

F-Factor	8,710	dscf/mmBtu
NOx MW	46	
CO MW	28	

[8] NOx, CO, VOC, PM10
Hourly Emissions (lb/hr) = Emission Factor (lb/mmBtu) x Total Heat Input (mmBtu/hr)
SOx, Tail Gas
Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Plant Inlet (mmscf/hr)
SOx, Supplemental Fuel
Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Supplemental Fuel (mmscf/hr)

[9] Daily Emissions (lb/day) = Hourly Emissions (lb/hr) x Hours per Day

[10] Annual Emissions (lb/yr) = Hourly Emissions (lb/hr) x Hours per Day x Days per Year

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Appendix D Operational Emissions - Thermal Oxidizer Unit

Table D.3 **AQIA Emission Rates**

	1-Hour Averaging Period		8-Hour Averaging Period		24-Hour Averaging Period		Annual Averaging Period	
Pollutant	**lb/hr[1]**	**g/s[2]**	**lb/8-hr[3]**	**g/s[4]**	**lb/24-hr[5]**	**g/s[6]**	**lb/yr[7]**	**g/s[8]**
NO2	1.053E+00	1.328E-01	--	--	--	--	9.22E+03	1.328E-01
SO2	5.177E+00	6.529E-01	--	--	1.243E+02	6.529E-01	3.20E+04	4.613E-01
CO	2.406E+00	3.035E-01	1.925E+01	3.035E-01	--	--	--	--
PM10	--	--	--	--	5.156E+00	2.710E-02	1.88E+03	2.710E-02
PM2.5	--	--	--	--	5.156E+00	2.710E-02	1.88E+03	2.710E-02

[1] 1-Hour Averaging Period (lb/hr) = Emission Rate (lb/hr)
[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600
[3] 8-Hour Averaging Period (lb/8-hr) = 1-Hour Averaging Period (lb/hr) x 8 Hours
[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600
[5] 24-Hour Averaging Period (lb/24-hr) = 1-Hour Averaging Period (lb/hr) x 24 Hours
[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600
[7] Annual Averaging Period (lb/yr) = 1-Hour Averaging Period (lb/hr) x 24 hours x 365 days
[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

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Appendix D Operational Emissions - Thermal Oxidizer Unit

Table D.4 Thermal Oxidizer Toxic Air Contaminant Emission Factors and Emissions

Toxic Air Contaminant	CAS No.	Molecular Weight (lb/lbmol)	Tail Gas 1 Inlet Concentration[1] (ppbv)	Tail Gas 1 Emission Factor[2] (lb/mmscf)	Natural Gas Emission Factor[3] (lb/mmscf)	Hourly Emissions[4] (lb/hr)	Annual Emissions[5] (lb/yr)	
Vinyl Chloride	75014	62.5	271	8.94E-04	--	1.24E-04	1.09E+00	V4
1,1-Dichloroethene	75354	96.94	34.3	1.75E-04	--	2.44E-05	2.13E-01	V5
Methylene Chloride	75092	84.93	1203	5.39E-03	--	7.49E-04	6.56E+00	M13
1,1-Dichloroethane	75343	98.96	30.5	1.59E-04	--	2.21E-05	1.94E-01	D6
Chloroform	67663	119.38	8	5.04E-05	--	7.00E-06	6.13E-02	C11
1,2-Dichloroethane	107062	98.96	364	1.90E-03	--	2.64E-04	2.31E+00	E6
1,1,1-Trichloroethane	71556	133.4	16.9	1.19E-04	--	1.65E-05	1.45E-01	M8
Benzene	71432	78.11	3680	1.52E-02	5.80E-03	2.27E-03	1.99E+01	B1
Trichloroethylene	79016	131.4	207	1.44E-03	--	1.99E-04	1.75E+00	T8
Toluene	108883	92.14	12901	6.27E-02	2.65E-02	9.47E-03	8.30E+01	T3
Tetrachloroethene	127184	165.83	671	5.87E-03	--	8.16E-04	7.14E+00	P2
Chlorobenzene	108907	112.56	8062	4.79E-02	--	6.65E-03	5.83E+01	C10
Xylenes	1330207	106.16	8735	4.89E-02	1.97E-02	7.36E-03	6.45E+01	X1
Formaldehyde	50000	--	--	--	1.23E-02	3.53E-04	3.09E+00	F2
Total PAHs (excluding	1151	--	--	--	1.00E-04	2.87E-06	2.51E-02	P41
Naphthalene	91203	--	--	--	3.00E-04	8.60E-06	7.54E-02	P62
Acetaldehyde	75070	--	--	--	3.10E-03	8.89E-05	7.79E-01	A1
Acrolein	107028	--	--	--	2.70E-03	7.74E-05	6.78E-01	A3
Ammonia	7664417	--	--	--	3.20E+00	9.18E-02	8.04E+02	A9
Ethyl Benzene	100414	--	--	--	6.90E-03	1.98E-04	1.73E+00	E3
Hexane	110543	--	--	--	4.60E-03	1.32E-04	1.16E+00	H6

[1] Tail Gas 1 Inlet Concentration (ppbv) from June 2022 LFG analysis.

[2] Tail Gas 1 Emission Factor (lb/mmscf) = Tail Gas 1 Inlet Concentration (ppbv) / 1,000 x Molecular Weight (lb/lbmol) / Molar Volume (scf/lbmol) x [1 - Control Efficiency (%)]

Molar Volume	379	scf/lbmol, @ 60 Deg F
Control Efficiency	98%	Rule 1150.1

[3] TAC calculations assume that emissions from the methane component of the tail gas streams may be calculated from the default emission factors for natural gas combustion.
Emission Factors are from South Coast AQMD Default Emission Factors for Natural Gas Combustion in External Combustion Equipment rated between 10 and 100 mmBtu/hr

[4] Hourly Emissions (lb/hr) = Tail Gas 1 Emission Factor (lb/mmscf) x Tail Gas 1 Flowrate (scfm) x 60 / 1,000,000 + Natural Gas Emission Factor (lb/mmscf) x Natural Gas Flowrate (scfm) x 60 / 1,000,000

[5] Annual Emissions (lb/yr) = Hourly Emissions (lb/hr) x Hours per Day x Days per Year

Hours per Day	24
Days per Year	365

Stream ID	Component	Flowrate (scfm)
Tail Gas Stream 1	Total	2,315
	CH_4	100.93
Tail Gas Stream 2	CH_4	97.00
Supplemental Fuel	--	280

Tail Gas 1 Flowrate (scfm)	2,315
Natural Gas Flowrate (scfm)	477.93

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Appendix D Operational Emissions - Thermal Oxidizer Unit

Table D.5 Thermal Oxidizer GHG Emission Factors and Emissions

Stream ID[1]	Stream Max Capacity[1] (scfm)	Component	Component Vol.%	Component Flowrate[2] (scfm)	GHG	Emission Factor[3] (lb/mmBtu)	Emission Factor[4] (lb/mmscf)	Annual Emissions[5] (lb/yr)	Daily Emissions (lb/day)	MT/yr	CO2e Eq[1]	CO2e[4] (MT/yr)
Tail Gas Stream 1	2,309	CO_2	95.29%	2,200.2	CO_2	--	116,121.37	134,288,485	367,914	60,901.81	1	60,901.81
		CH_4	4.36%	100.67	CO_2	116.94	122,787.00	6,497,079	17,800	2,946.52	1	2,946.52
					CH_4	2.2E-03	2.31	122.23	0.33	0.06	25	1.39
					N_2O	2.20E-04	0.23	12.22	0.03	0.01	298	1.65
Tail Gas Stream 2	883	CO_2	0.00%	0.00	CO_2	--	116,121.37	0	0	0.00	1	0.00
		CH_4	10.96%	96.78	CO_2	116.94	122,787.00	6,245,669.55	17,111	2,832.50	1	2,832.50
					CH_4	2.2E-03	2.31	117.50	0.32	0.05	25	1.33
					N_2O	2.20E-04	0.23	11.75	0.03	0.01	298	1.59
Supplemental Fuel	280	--	--	--	CO_2	1.17E+02	122,787.00	18,070,317.22	49,507.72	8,195.16	1	8,195.16
					CH_4	2.2E-03	2.31	339.96	0.93	0.15	25	3.85
					N_2O	2.20E-04	0.23	34.00	0.09	0.02	298	4.59
											Total CO2e (MT/yr)	74,890.39

[1] Tail Gas Stream 1 and 2 flowrates and composition from Material Balance in Appendix B. Supplemental Fuel flowrate from Perennial.

[2] Component Flowrate (scfm) = Stream Max Capacity (scfm) x Component Vol.%

[3] GHG calculations assume that emissions from the methane component of the tail gas streams may be calculated from the default emission factors for natural gas combustion.
Emission factors and CO2e Eq are from SCAQMD 'Combustion Emission Estimator'.
http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/ghg-estimator-(2018-11).xlsx?sfvrsn=6

[4] CO_2, Tail Gas
The CO_2 in the tail gas streams passes through the thermal oxidizer.
Emission Factor (lb/mmscf) = Density (lb/scf) x 1,000,000
Density (lb/scf) = MW / Molar Volume

CO_2 MW	44.01	lb/lbmol
Molar Volume	379	scf/lbmol, @ 60 Deg F

CH_4 / Supplemental Fuel
Emission Factor (lb/mmscf) = Emission Factor (lb/mmBtu) x HHV (mmBtu/mmscf)

HHV	1,050	mmBtu/mmscf

[5] Tail Gas
Annual Emissions (lb/yr) = Component Flowrate (scfm) x 60 / 1,000,000 x Hours per Day x Days per Year x Emission Factor (lb/mmscf)
Supplemental Fuel
Annual Emissions (lb/yr) = Stream Max Capacity (scfm) x 60 / 1,000,000 x Hours per Day x Days per Year x Emission Factor (lb/mmscf)

Hours per Day	24
Days per Year	365

[6] CO2e (MT/yr) = Annual Emissions (lb/yr) x CO2e Eq / 2,205

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Appendix D Operational Emissions - Off-Spec Flare

Table D.6 Data (Flare)

Flare Equipment	Stream Max Capacity[1] (scfm)	Stream Max Capacity[1] (mmbtu/hr)	Hours per Day	Annual Capacity Factor (%)	Hours per Year[2]	Gas Consumption[3] (mmscf/hr)	Gas Consumption[4] (mmscf/yr)
Other Flare Gas (Off-Spec)	2,700	120	24	10%	876	0.1620	141.91
Pilot Gas (Natural Gas)	1.59	0.1		100%	8760	0.0000952	0.8343
	Total Heat Input (mmbtu/hr)	120.1			Total Gas Consumption (mmscf/hr)	0.16210	

[1] Off-Spec Flare Gas Stream Max Capacity (mmBtu/hr) from Perennial (Appendix B).
Pilot Gas (Natural Gas)
Stream Max Capacity (scfm) = Stream Max Capacity (mmBtu/hr) / 60 / NG HHV (mmBtu/mmscf) x 1,000,000
NG HHV 1,050 mmbtu/mmscf
[2] Hours per Year = 24 Hours per Day x 365 Days per Year x Annual Capacity Factor (%)
[3] Gas Consumption (mmscf/hr) = Stream Max Capacity (scfm) x 60 min/hr / 1,000,000
[4] Gas Consumption (mmscf/yr) = Gas Consumption (mmscf/hr) x Hours per Day x Days per Year

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Appendix D Operational Emissions - Off-Spec Flare

Table D.7 Flare Criteria Pollutant Emission Factors and Emissions - At Maximum LFG Stream[1]

Criteria Pollutant	Flare Gas Content (ppmv)	Emission Factor[4] (lb/mmscf)	Emission Factor (lb/mmbtu)	Hourly Emissions[6] (lb/hr)	Daily Emissions[7] (lb/day)	Annual Emissions[6] (lb/yr)
NOx[2]	--	--	0.06	7.2060	172.94	6,359.76
CO[3]	--	--	0.06	7.2060	172.94	6,359.76
VOC[3]	--	--	0.006	0.7206	17.29	635.98
SOx[4]	85	14.354	--	2.3253	55.81	--
	60	10.132	--	1.6414	39.39	1,437.84
SOx[4]	--	0.60	--	0.0001	0.001	0.50
PM10[5]	--	6.1	--	0.9888	23.73	870.7523

[1] Maximum LFG Stream (Off-Spec Flare Gas and Pilot Gas combustion) included for informational purposes only. Off-Spec Flare wil only be operate in case of a system upset or if RNG is off-spec. Flare will not be concurrently operated with the Thermal Oxidizer.

[2] NOx emission factor from Rule 1118.1, Table 1, for "Other Flare Gas." The flare manufacturer has guaranteed that the flare will operate in compliance with this emission limit.

[3] The VOC and CO emission factors are the South Coast AQMD BACT/LAER determination for A/N 614468.

[4] Flare Gas

The South Coast AQMD BACT/LAER determination for A/N 614468 requires sulfur content no higher than: 85 ppmv, averaged daily; and 60 ppmv, averaged monthly.
Hourly and daily emissions are estimated from 85 ppmv; annual, monthly, and 30-day average emissions are estimated from 60 ppmv.
This is expected to be a conservative estimate since sulfur compounds are removed upstream of the flare.
Emission Factor (lb/mmscf) = Content (ppmv) x SOx MW (lb/lbmol) / Molar Volume (scf/lbmol)

SOx MW	64	lb/lbmol
Molar Volume	379	scf/lbmol, @ 60 Deg F

Pilot Gas

South Coast AQMD Default

[5] The PM10 emission factor is the South Coast AQMD BACT/LAER determination for A/N 614468.

[6] NOx, CO, and VOC

Hourly Emissions (lb/hr) = Emission Factor (lb/mmBtu) x Total Heat Input (mmBtu/hr)
Annual Emissions (lb/yr) = Emission Factor (lb/mmBtu) x (Off-Spec Flare Gas Steam Max Capacity (mmBtu/hr) x Hours Per Year + Pilot Gas Steam Max Capacity (mmBtu/hr) x Hours Per Year)

SOx, Flare Gas

Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Flare Gas Consumption (mmscf/hr)
Annual Emissions (lb/yr) = Hourly Emissions (lb/hr) x Hours per Year

SOx, Pilot Gas

Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Pilot Gas Consumption (mmscf/hr)
Annual Emissions (lb/yr) = Hourly Emissions (lb/hr) x Hours per Year

PM10

Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Total Gas Consumption (mmscf/hr)
Annual Emissions (lb/yr) = Emission Factor (lb/mmscf x (Off-Spec Flare Gas Consumption (mmscf/hr) x Hours Per Year + Pilot Gas Consumption (mmscf/hr) x Hours Per Year)

[7] Daily Emissions (lb/day) = Hourly Emissions (lb/hr) x Hours per Day

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Appendix D Operational Emissions - Off-Spec Flare

Table D.8 Flare Criteria Pollutant Emission Factors and Emissions - Pilot Gas Only[1]

Criteria Pollutant	Flare Gas Content (ppmv)	Emission Factor[4] (lb/mmscf)	Emission Factor (lb/mmbtu)	Hourly Emissions[6] (lb/hr)	Daily Emissions[7] (lb/day)	Annual Emissions[6] (lb/yr)
NOx[2]	--	--	0.06	0.0060	0.14	52.56
CO[3]	--	--	0.06	0.0060	0.14	52.56
VOC[3]	--	--	0.006	0.0006	0.01	5.26
SOx[4]	--	0.60	--	0.0001	0.001	0.50
PM10[5]	--	6.1	--	0.0006	0.01	5.09

[1] Off-Spec Flare Gas not included since the flare will not be used concurrently with the Thermal Oxidizer, under which condition, only pilot gas consumption would occur at flare.
[2] NOx emission factor from Rule 1118.1, Table 1, for "Other Flare Gas." The flare manufacturer has guaranteed that the flare will operate in compliance with this emission limit.
[3] The VOC and CO emission factors are the South Coast AQMD BACT/LAER determination for A/N 614468.
[4] Pilot Gas
South Coast AQMD Default
[5] The PM10 emission factor is the South Coast AQMD BACT/LAER determination for A/N 614468.
[6] NOx, CO, and VOC
Hourly Emissions (lb/hr) = Emission Factor (lb/mmBtu) x Pilot Gas Steam Max Capacity (mmBtu/hr)
Annual Emissions (lb/yr) = Emission Factor (lb/mmBtu) x Pilot Gas Steam Max Capacity (mmBtu/hr) x Hours Per Year
SOx, Pilot Gas
Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Pilot Gas Consumption (mmscf/hr)
Annual Emissions (lb/yr) = Hourly Emissions (lb/hr) x Hours per Year
PM10
Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Pilot Gas Consumption (mmscf/hr)
Annual Emissions (lb/yr) = Emission Factor (lb/mmscf x Pilot Gas Consumption (mmscf/hr) x Hours Per Year
[7] Daily Emissions (lb/day) = Hourly Emissions (lb/hr) x Hours per Day

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Appendix D **Operational Emissions - Off-Spec Flare**

Table D.9 **AQIA Emission Rates**

	1-Hour Averaging Period		8-Hour Averaging Period		24-Hour Averaging Period		Annual Averaging Period	
Pollutant	**lb/hr[1]**	**g/s[2]**	**lb/8-hr[3]**	**g/s[4]**	**lb/24-hr[5]**	**g/s[6]**	**lb/yr[7]**	**g/s[8]**
NO2	6.000E-03	7.567E-04	--	--	--	--	5.256E+01	7.567E-04
SO2	5.714E-05	7.206E-06	--	--	1.371E-03	7.206E-06	5.006E-01	7.206E-06
CO	6.000E-03	7.567E-04	4.800E-02	7.567E-04	--	--	--	--
PM10	--	--	--	--	1.394E-02	7.326E-05	5.089E+00	7.326E-05
PM2.5	--	--	--	--	1.394E-02	7.326E-05	5.089E+00	7.326E-05

[1] 1-Hour Averaging Period (lb/hr) = Emission Rate (lb/hr)
[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600
[3] 8-Hour Averaging Period (lb/8-hr) = 1-Hour Averaging Period (lb/hr) x 8 Hours
[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600
[5] 24-Hour Averaging Period (lb/24-hr) = 1-Hour Averaging Period (lb/hr) x 24 Hours
[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600
[7] NO2 and SO2:
Annual Averaging Period (lb/yr) = 1-Hour Averaging Period (lb/hr) x Annual Hours of Opeation :
Pilot Gas (Natural Gas) Annual Operating Hours 8,760
PM10 and PM2.5:
Annual Averaging Period (lb/yr) = Emission Factor (lb/mmscf x Pilot Gas Consumption (mmscf/hr) x Hours Per Year
[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

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Appendix D Operational Emissions - Off-Spec Flare

Table D.10 Flare GHG Emission Factors and Emissions - At Maximum LFG Stream[1]

GHG	Emission Factor[2] (lb/mmBtu)	Emission Factor[3] (lb/mmscf)	Gas Consumption (mmscf/yr)[4]	Daily Emissions (lb/day)[5]	Annual Emissions[6] (lb/yr)	MT/yr	CO2e Eq[2]	CO2e[7] (MT/yr)
CO_2	116.94	122,787	142.75	48,020.24	17,527,388.18	7,948.93	1	7,948.93
CH_4	2.200E-03	2.31		0.9034	329.74	0.15	25	3.74
N_2O	2.200E-04	0.23		0.0903	32.97	0.01	298	4.46
							Total CO2e (MT/yr)	7,957.12

[1] Maximum LFG Stream (Off-Spec Flare Gas and Pilot Gas combustion) included for informational purposes only. Off-Spec Flare wil only be operate in case of a system upset or if RNG is off-spec. Flare will not be concurrently operated with the Thermal Oxidizer.

[2] Emission factors and CO2e Eq are from SCAQMD 'Combustion Emission Estimator'.
http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/ghg-estimator-(2018-11).xlsx?sfvrsn=6
Fuel Type: Natural Gas

[3] Emission Factor (lb/mmscf) = Emission Factor (lb/mmBtu) x HHV (mmBtu/mmscf)
HHV 1,050 mmBtu/mmscf

[4] Gas Consumption (mmscf/yr) is total gas consumed from both off-spec flare and pilot gas combustion

[5] Daily Emissions (lb/day) = Annual Emissions (lb/yr) / 365 days

[6] Annual Emissions (lb/yr) = Emission Factor (lb/mmscf) x Gas Consumption (mmscf/yr)

[7] CO2e (MT/yr) = Annual Emissions (lb/yr) x CO2e Eq / 2,205

Table D.11 Flare GHG Emission Factors and Emissions - Pilot Gas Only[1]

GHG	Emission Factor[2] (lb/mmBtu)	Emission Factor[3] (lb/mmscf)	Gas Consumption (mmscf/yr)[4]	Daily Emissions (lb/day)[5]	Annual Emissions[6] (lb/yr)	MT/yr	CO2e Eq[2]	CO2e[7] (MT/yr)
CO_2	116.94	122,787	0.83	170.99	102,439.44	46.46	1	46.46
CH_4	2.200E-03	2.31		0.0032	1.93	0.00	25	0.02
N_2O	2.200E-04	0.23		0.0003	0.19	0.00	298	0.03
							Total CO2e (MT/yr)	46.51

[1] Off-Spec Flare Gas not included since the flare will not be used concurrently with the Thermal Oxidizer, under which condition, only pilot gas consumption would occur at flare.

[2] Emission factors and CO2e Eq are from SCAQMD 'Combustion Emission Estimator'.
http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/ghg-estimator-(2018-11).xlsx?sfvrsn=6
Fuel Type: Natural Gas

[3] Emission Factor (lb/mmscf) = Emission Factor (lb/mmBtu) x HHV (mmBtu/mmscf)
HHV 1,050 mmBtu/mmscf

[4] Gas Consumption (mmscf/yr) is total gas consumed from both off-spec flare and pilot gas combustion

[5] Daily Emissions (lb/day) = Annual Emissions (lb/yr) / 365 days

[6] Annual Emissions (lb/yr) = Emission Factor (lb/mmscf) x Gas Consumption (mmscf/yr)

[7] CO2e (MT/yr) = Annual Emissions (lb/yr) x CO2e Eq / 2,205

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Appendix D Operational Emissions - Off-Spec Flare

Table D.12 Flare Toxic Air Contaminant Emission Factors and Emissions - At Maximum LFG Stream[1]

Toxic Air Contaminant	CAS No.	Emission Factor[1] (lb/mmscf)	Hourly Emissions Controlled[3] (lb/hr)	Annual Emissions Controlled[4] (lb/yr)	
Benzene	71432	0.159	2.58E-02	2.27E+01	B1
Ethylbenzene	100414	1.444	2.34E-01	2.06E+02	E3
Hexane	110543	0.029	4.70E-03	4.14E+00	H6
Toluene	108883	0.058	9.40E-03	8.28E+00	T3
Xylenes	1330207	0.029	4.70E-03	4.14E+00	X1
Formaldehyde	50000	1.169	1.89E-01	1.67E+02	F2
Acetaldehyde	75070	0.043	6.97E-03	6.14E+00	A1
Acrolein	107028	0.01	1.62E-03	1.43E+00	A3
Naphthalene	91203	0.011	1.78E-03	1.57E+00	P62
Total PAH (excluding Naphthalene)	1151	0.003	4.86E-04	4.28E-01	P41

Gas Consumption (mmscf/hr)	Gas Consumption (mmscf/yr)
0.16	142.75

[1] Maximum LFG Stream (Off-Spec Flare Gas and Pilot Gas combustion) included for informational purposes only. Off-Spec Flare wil only be operate in case of a system upset or if RNG is off-spec. Flare will not be concurrently operated with the Thermal Oxidizer.
[2] Emission Factors are from South Coast AQMD Default Emission Factors for Natural Gas Combustion in Flare
[3] Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Gas Consumption (mmscf/hr)
[4] Annual Emissions (lb/yr) = Emission Factor (lb/mmscf) x Gas Consumption (mmscf/yr)

Table D.13 Flare Toxic Air Contaminant Emission Factors and Emissions - Pilot Gas Only[1]

Toxic Air Contaminant	CAS No.	Emission Factor[2] (lb/mmscf)	Hourly Emissions Controlled[3] (lb/hr)	Annual Emissions Controlled[4] (lb/yr)	
Benzene	71432	0.159	1.51E-05	1.33E-01	B1
Ethylbenzene	100414	1.444	1.38E-04	1.20E+00	E3
Hexane	110543	0.029	2.76E-06	2.42E-02	H6
Toluene	108883	0.058	5.52E-06	4.84E-02	T3
Xylenes	1330207	0.029	2.76E-06	2.42E-02	X1
Formaldehyde	50000	1.169	1.11E-04	9.75E-01	F2
Acetaldehyde	75070	0.043	4.10E-06	3.59E-02	A1
Acrolein	107028	0.01	9.52E-07	8.34E-03	A3
Naphthalene	91203	0.011	1.05E-06	9.18E-03	P62
Total PAH (excluding	1151	0.003	2.86E-07	2.50E-03	P41

Gas Consumption (mmscf/hr)	Gas Consumption (mmscf/yr)
0.0001	0.83

[1] Off-Spec Flare Gas not included since the flare will not be used concurrently with the Thermal Oxidizer, under which condition, only pilot gas consumption would occur at flare.
[2] Emission Factors are from South Coast AQMD Default Emission Factors for Natural Gas Combustion in Flare
[3] Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Gas Consumption (mmscf/hr)
[4] Annual Emissions (lb/yr) = Emission Factor (lb/mmscf) x Gas Consumption (mmscf/yr)

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Appendix D Operational Emissions - Generator Set with ICE

Table D.14 Data (Emergency ICE)

Engine Rating[1] (hp)	Fuel Consumption[1] (scf/hr)	Hours per Day (Maximum Permitted Usage)	Hours per Year (Maximum Permitted Usage)	Fuel Consumption[2] (mmscf/hr)	Fuel Consumption[3] (mmscf/yr)
253	1,655	24	200	0.001655	0.3310

[1] Engine Rating (hp) and Fuel Consumption (scf/hr) from manufacturer's specification at 100% load.
Fuel Consumption (scf/hr) = Fuel Consumption (scf/hr) @ 905 mmBtu/mmscf x 905 mmBtu/mmscf / NG HHV (mmBtu/mmscf)

Fuel Consumption	1,920	scf/hr, @ 905 mmBtu/mmscf and 32 scfm at 100% load
NG HHV	1,050	mmBtu/mmscf

[2] Fuel Consumption (mmscf/hr) = Fuel Consumption (scf/hr) / 1,000,000
[3] Fuel Consumption (mmscf/yr) = Fuel Consumption (mmscf/hr) x Hours per Year (Maximum Permitted Usage)

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Appendix D Operational Emissions - Generator Set with ICE

Table D.15 Emergency ICE Criteria Pollutant Emission Factors and Emissions

Criteria Pollutant	EPA Certified Emissions (g/bhp-hr)	Emission Factor (lb/mmscf)	Hourly Emissions[3] (lb/hr)	Daily Emissions[4] (lb/day)	Annual Emissions[5] (lb/yr)
NOx[1]	0.3	--	0.1672	4.01	33.44
CO[1]	0.5	--	0.2786	6.69	55.73
VOC[1]	0.049	--	0.0273	0.66	5.46
SOx[2]	--	0.60	0.0010	0.024	0.20
PM10[2]	--	10	0.0165	0.40	3.31

[1] Certification Emission Levels (g/bhp-hr) for EPA Family PORGB10.3ET1 from
https://www.epa.gov/system/files/documents/2024-02/large-spark-ignition-2011-present.xlsx
Note: VOC is shown as 0.0 g/bhp-hr. Emission calculations assume 0.049 g/bhp-hr.
Horsepower Rating and Fuel Consumption from Gas Engine Technical Data Sheet, Caterpillar DG 150 ICE, at 100% load with no fan

[2] South Coast AQMD Default Emission Factor (lb/mmscf) for Natural Gas Combustion in Internal Combustion Engine

[3] NOx, CO, and VOC
Hourly Emissions (lb/hr) = EPA Certified Emissions (g/bhp-hr) x Engine Rating (bhp) / 454 g/lb
SOx and PM10
Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Fuel Consumption (mmscf/hr)

[4] Daily Emissions (lb/day) = Hourly Emissions (lb/hr) x Hours per Day

[5] Annual Emissions (lb/yr) = Hourly Emissions (lb/hr) x Hours per Year

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Appendix D Operational Emissions - Generator Set with ICE

Table D.16 **AQIA Emission Rates**

	1-Hour Averaging Period		8-Hour Averaging Period		24-Hour Averaging Period		Annual Averaging Period	
Pollutant	lb/hr[1]	g/s[2]	lb/8-hr[3]	g/s[4]	lb/24-hr[5]	g/s[6]	lb/yr[7]	g/s[8]
NO2	1.672E-01	2.108E-02	--	--	--	--	3.344E+01	4.814E-04
SO2	9.929E-04	1.252E-04	--	--	2.383E-02	1.252E-04	1.986E-01	2.859E-06
CO	2.786E-01	3.514E-02	2.229E+00	3.514E-02	--	--	--	--
PM10	--	--	--	--	3.972E-01	2.087E-03	3.310E+00	4.765E-05
PM2.5	--	--	--	--	3.972E-01	2.087E-03	3.310E+00	4.765E-05

[1] 1-Hour Averaging Period (lb/hr) = Emission Rate (lb/hr)
[2] 1-Hour Averaging Period (g/s) = 1-Hour Averaging Period (lb/hr) x 454 / 3,600
[3] 8-Hour Averaging Period (lb/8-hr) = 1-Hour Averaging Period (lb/hr) x 8 hr/day
[4] 8-Hour Averaging Period (g/s) = 8-Hour Averaging Period (lb/8-hr) / 8 Hours x 454 / 3,600
[5] 24-Hour Averaging Period (lb/24-hr) = 1-Hour Averaging Period (lb/hr) x Hours per Day (Maximum Permitted Usage)
Hours per Day (Maximum Permitted Usage) 24.0
[6] 24-Hour Averaging Period (g/s) = 24-Hour Averaging Period (lb/24-hr) / 24 Hours x 454 / 3,600
[7] Annual Averaging Period (lb/yr) = 1-Hour Averaging Period (lb/hr) x Hours per Year (Maximum Permitted Usage)
Hours per Year (Maximum Permitted Usage) 200
[8] Annual Averaging Period (g/s) = Annual Averaging Period (lb/yr) / 8,760 Hours x 454 / 3,600

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Appendix D Operational Emissions - Generator Set with ICE

Table D.17 Emergency ICE Toxic Air Contaminant Emission Factors and Emissions

Toxic Air Contaminant	CAS No.	Emission Factor Uncontrolled[1] (lb/mmscf)	Hourly Emissions Controlled[2] (lb/hr)	Annual Emissions Controlled[3] (lb/yr)
Benzene	71432	1.61	2.66E-03	5.33E-01
1,3-Butadiene	106990	0.676	1.12E-03	2.24E-01
Carbon Tetrachloride	56235	0.0181	3.00E-05	5.99E-03
Ethylene Dibromide	106934	0.0217	3.59E-05	7.18E-03
1,2-Dichloroethane	107062	0.0115	1.90E-05	3.81E-03
Formaldehyde	50000	20.9	3.46E-02	6.92E+00
Methylene Chloride	75092	0.042	6.95E-05	1.39E-02
Benz(a)anthracene	56553	0	0.00E+00	0.00E+00
Benzo(a)pyrene	50328	0	0.00E+00	0.00E+00
Benzo(b)fluoranthene	205992	0	0.00E+00	0.00E+00
Benzo(k)fluoranthene	207089	0	0.00E+00	0.00E+00
Chrysene	218019	0	0.00E+00	0.00E+00
Indeno(1,2,3-c,d)pyrene	193395	0	0.00E+00	0.00E+00
Naphthalene	91203	0.099	1.64E-04	3.28E-02
Vinyl Chloride	75014	0.00732	1.21E-05	2.42E-03
1,1,2,2-Tetrachloroethane	79345	0.0258	4.27E-05	8.54E-03
1,1,2-Trichloroethane	79005	0.0156	2.58E-05	5.16E-03
Acetaldehyde	75070	2.85	4.72E-03	9.43E-01
Acrolein	107028	2.68	4.44E-03	8.87E-01
Ammonia	7664417	3.2	5.30E-03	1.06E+00
Chloroform	67663	0.014	2.32E-05	4.63E-03
Ethylbenzene	100414	0.0253	4.19E-05	8.37E-03
n-Hexane	110543	0	0.00E+00	0.00E+00
Methanol	67561	3.12	5.16E-03	1.03E+00
Styrene	100425	0.0121	2.00E-05	4.00E-03
Toluene	108883	0.569	9.42E-04	1.88E-01
Xylene	1330207	0.199	3.29E-04	6.59E-02

[1] Emission Factors are from South Coast AQMD Default Emission Factors for Natural Gas Combustion in Lean-Burn ICE
[2] Hourly Emissions (lb/hr) = Emission Factor (lb/mmscf) x Hourly Fuel Consumption (mmscf/hr)
[3] Annual Emissions (lb/yr) = Emission Factor (lb/mmscf) x Annual Fuel Consumption (mmscf/yr)

Fuel Consumption (mmscf/hr)	Fuel Consumption (mmscf/yr)
0.001655	0.3310

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Appendix D Operational Emissions - Generator Set with ICE

Table D.18 Emergency ICE GHG Emission Factors and Emissions

GHG	Emission Factor[1] (lb/mmBtu)	Emission Factor[2] (lb/mmscf)	Fuel Consumption (mmscf/yr)	Daily Emissions (lb/day)	Annual Emissions[3] (lb/yr)	MT/yr	CO2e Eq[1]	CO2e[4] (MT/yr)
CO_2	116.94	122,787.00	0.3310	111.34	40,638.99	18.43	1	18.43
CH_4	2.2E-03	2.31		0.0021	0.76	0.00	25	0.009
N_2O	2.20E-04	0.23		0.0002	0.08	0.00	298	0.010
							Total CO2e (MT/yr)	18.45

[1] Emission factors and CO2e Eq are from SCAQMD 'Combustion Emission Estimator'.
http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/ghg-estimator-(2018-11).xlsx?sfvrsn=6
Fuel Type: Natural Gas

[2] Emission Factor (lb/mmscf) = Emission Factor (lb/mmBtu) x HHV (mmBtu/mmscf)
HHV 1,050 mmBtu/mmscf

[3] Annual Emissions (lb/yr) = Emission Factor (lb/mmscf) x Fuel Consumption (mmscf/yr)

[4] CO2e (MT/yr) = Annual Emissions (lb/yr) x CO2e Eq / 2,205

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Appendix D Operational Emissions - RNG Facility Fugitive GHG Emissions

Table D.19 Fugitive Methane GHG Emission Factors and Emissions

GHG	CO2 Content Relative to Methane (Mass %)[2]	Fugitive Gas Leak Rate[3] (lb/hr)	Daily Emissions (lb/day)	Annual Emissions[4] (lb/yr)	MT/yr	CO2e Eq[5]	CO2e[5] (MT/yr)
CO_2	4.88%	0.1502	3.60	1,315.48	0.60	1	0.60
CH_4	--	3.0793	73.9040	26,974.95	12.23	25	305.838
N_2O	--	--	--	--	--	298	--
						Total CO2e (MT/yr)	306.44

[1] Emission factors are from SCAQMD Guidelines for Reporting VOC Emissions from Component Leaks - Method 2 - Correlation Equation Method (below)
https://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidelreportvocemiscomleaks.pdf
Calculated fugitive emissions are considered total hydrocarbon and equivalent to CH4

SCAQMD Guidelines for Reporting VOC Emissions from Component Leaks - Method 2 - Correlation Equation Method	
Component Type	**Correlation Equation Fugitive Leak Rate (lb/hr per component)**
Valves/All	5.19E-04
Pump seals/All	5.35E-03
Others/All	1.04E-03
Connectors/All	3.27E-04
Flanges/All	7.98E-04
Open-ended lines/All	3.77E-04
Screening Value*	500

*Screening Value of 500 ppmv was chosen per Rule 1150.1 component leak threshold

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Appendix D Operational Emissions - RNG Facility Fugitive GHG Emissions

[2] CO_2 MW 44.01 lb/lbmol
CH_4 MW 16.04 lb/lbmol
Molar Volume 177.56 cf/lbmol @ 114 Deg F and 34.67 psia (see Process Point 5 in PFD in Appendix b Page: 8)
Density of Gas = MW x Molar Volume
CO_2 Density 0.2479 lb/cf @ 114 Deg F and 34.67 psia
CH_4 Density 0.0903 lb/cf @ 114 Deg F and 34.67 psia
Molar Volume of Gas in Stream = Gas Composition (%) x Molar Volume
CO_2 Composition 1.71 Vol % (see Process Point 5 in PFD in Appendix b Page: 8)
CH_4 Composition 96.21 Vol % (see Process Point 5 in PFD in Appendix b Page: 8)
CO_2 Molar Volume 3.04 cf/lbmol @ 114 Deg F and 34.67 psia
CH_4 Molar Volume 170.83 cf/lbmol @ 114 Deg F and 34.67 psia
Molar Volume of Gas in Stream = Density x Molar Volume of Gas in Stream (CO2 or CH4)
CO_2 Molar Mass 0.7526 lb/lbmol of Gas
CH_4 Molar Mass 15.4321 lb/lbmol of Gas
CO2 Content Relative to Methane = CO2 Molar Mass / CH4 Molar Mass x 100

[3] Fugitive Methane Leak Rate calculated based on component counts provided by Tent and SoCalGas. All components shown are aboveground and under positive pressure. Pressure Relief Valves, Orifice Meters, and Regulators use the 'Others/All' component type emission factor. All other components use the corresponding SCAQMD component types.

RNG Facility				Point of Receipt Station	
Gas Service		Condensate Service		Gas Service	
Component Type	**Number of Components**	**Component Type**	**Number of**	**Component Type**	**Number of Components**
Connectors	3600	Valves	300	Connectors	560
Block Valves	575	Flanges	125	Block Valves	197
Control Valves	275	Connector	1850	Control Valves	3
Pressure Relief Valves	75	Open Ended Line	100	Pressure Relief Valves	4
Orifice Meter	N/A	Pump	0	Orifice Meter	1
Regulator	50	Other	0	Regulator	11
Open-ended line	350	--	--	Open-ended line	0

[4] Annual Emissions (lb/yr) =Fugitive Gas Leak Rate (lb/hr) x Annual Hours of Active Leaking
Annual Hours of Active Leaking 8,760

[5] CO2e (MT/yr) = Annual Emissions (lb/yr) x CO2e Eq / 2,205
CO2e Eq are from SCAQMD 'Combustion Emission Estimator'.

http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/ghg-estimator-(2018-11).xlsx?sfvrsn=6

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Appendix D Operational Emissions - RNG Facility Product Gas Combustion GHG Emissions

Table D.20 Product Gas GHG Emission Factors and Emissions

Stream ID[1]	Stream Max Capacity[1] (scfm)	Component[2]	Component Vol.%[1]	Component Flowrate[3] (scfm)	GHG	Emission Factor[4] (lb/mmBtu)	Emission Factor[5] (lb/mmscf)	Annual Emissions[6] (lb/yr)	Daily Emissions (lb/day)	MT/yr	CO2e Eq[4]	CO2e[7] (MT/yr)
Product Gas Stream	2,412	CO_2	1.71%	41.25	CO_2	--	116,121.37	2,517,335	6,897	1,141.65	1	1,141.65
		CH_4	96.21%	2,320.59	CO_2	116.94	122,787.00	149,763,252	410,310	67,919.84	1	67,919.84
					CH_4	2.2E-03	2.31	2,817.51	7.72	1.28	25	31.94
					N_2O	2.20E-04	0.23	281.75	0.77	0.13	298	38.08
											Total CO2e (MT/yr)	69,131.51

1 Product Gas Stream flowrate, methane, and carbon dioxide content from PFD in Appendix B (page 8, Process Point 5).
2 CO_2 in Product Gas Stream is not combusted, and is "passed-though".
3 Component Flowrate (scfm) = Stream Max Capacity (scfm) x Component Vol.%
4 GHG calculations assume that emissions from the methane component of the tail gas streams may be calculated from the default emission factors for natural gas combustion.
Emission factors and CO2e Eq are from SCAQMD 'Combustion Emission Estimator'.
http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/ghg-estimator-(2018-11).xlsx?sfvrsn=6
5 CO_2, Product Gas
The CO_2 in the product gas streams passes through and is not combusted.
Emission Factor (lb/mmscf) = Density (lb/scf) x 1,000,000
Density (lb/scf) = MW / Molar Volume

CO_2 MW	44.01	lb/lbmol
Molar Volume	379	scf/lbmol, @ 60 Deg F

CH_4 Product Gas
Emission Factor (lb/mmscf) = Emission Factor (lb/mmBtu) x HHV (mmBtu/mmscf)

HHV	1,050	mmBtu/mmscf

6 Annual Emissions (lb/yr) = Component Flowrate (scfm) x 60 / 1,000,000 x Hours per Day x Days per Year x Emission Factor (lb/mmscf)

Hours per Day	24
Days per Year	365

7 CO2e (MT/yr) = Annual Emissions (lb/yr) x CO2e Eq / 2,205

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Appendix D Baseline Emissions - Flare Station

Table D.21 Flare Data (Flare Station)

Flare ID	LFG Consumption 2023 Peak Day[1] (scf/day)	LFG Consumption 2024 Peak Day[1] (scf/day)	LFG Consumption Baseline[2] (scf/day)	LFG Consumption Baseline[3] (mmscf/day)
Flare I-1	1,833,383	1,922,651	1,922,651	1.92
Flare I-2	1,837,937	1,896,137	1,896,137	1.90
Flare I-3	651,385	1,949,541	1,949,541	1.95
Flare I-4	1,296,872	8,705	8,705	0.01
Flare I-5	5,001,479	5,300,661	5,300,661	5.30
Flare I-6[4]	0	0	0	0.00
Total	10,621,056	11,077,694	11,077,694	11.08

Note: The baseline shown in Table D.18 is approximately
7,693 scfm
The averages for calendar years 2023 and 2024, respectively are
3,140 scfm
3,906 scfm
The RNG facility is designed for
6,000 scfm

[1] This data represents the highest daily total LFG consumption in calendar years 2023 and 2024. The highest daily total LFG consumption in calendar year 2023 occurred on July 11, 2023.
The highest daily total LFG consumption in calendar year 2024 occurred on May 7, 2024.

[2] The baseline LFG consumption for the flare station is defined as the day with the highest daily total LFG consumption. The highest daily total LFG consumption occurred in 2024.
Baseline emissions are calcuated from the highest daily total LFG consumption in 2024.

[3] LFG Consumption Baseline (mmscf/day) = LFG Consumption Baseline (scf/day) / 1,000,000.

[4] Flare I-6 operated in calendar year 2023 and 2024, but not on the daily with highest daily total LFG consumption.
Flare I-6 is excluded from Table D.19.

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Appendix D Baseline Emissions - Flare Station

Table D.22 Flare Station Criteria Pollutant Emission Factors and Emissions

Flare ID	LFG Consumption Baseline (mmscf/day)	Parameters	NOx	CO	VOC	SOx	PM10/PM2.5[1]
Flares I-1, I-2, I-3, and I-4	--	Maximum Hourly Emissions[2] (lb/hr)	2.7	2.1	0.78	1.3	1.28
		Maximum LFG Consumption[2] (scfm)	1700	1700	1700	1700	1700
Flare I-5	--	Maximum Hourly Emissions[2] (lb/hr)	7.2	5.6	1.9	3.2	3.15
		Maximum LFG Consumption[2] (scfm)	4200	4200	4200	4200	4200
Flare I-1	1.92	Emission Factor[3] (lb/mmscf)	26.47	20.59	7.65	12.75	12.55
		Emissions[4] (lb/day)	50.89	39.58	14.70	24.50	24.13
Flare I-2	1.90	Emission Factor[3] (lb/mmscf)	26.47	20.59	7.65	12.75	12.55
		Emissions[4] (lb/day)	50.19	39.04	14.50	24.17	23.79
Flare I-3	1.95	Emission Factor[3] (lb/mmscf)	26.47	20.59	7.65	12.75	12.55
		Emissions[4] (lb/day)	51.61	40.14	14.91	24.85	24.46
Flare I-4	0.01	Emission Factor[3] (lb/mmscf)	26.47	20.59	7.65	12.75	12.55
		Emissions[4] (lb/day)	0.23	0.18	0.07	0.11	0.11
Flare I-5	5.30	Emission Factor[3] (lb/mmscf)	28.57	22.22	7.54	12.70	12.50
		Emissions[4] (lb/day)	151.45	117.79	39.97	67.31	66.26
Totals	--	Emissions	304.37	236.73	84.14	140.94	138.75

[1] For combustion sources, PM10 = PM2.5.
[2] Emission factors are derived from A/N 543222, the current Permit to Operate for the flare station.
Maximum LFG consumption rate for Flares I-1, I-2, I-3, and I-4 are from Condition No. 11. Maximum LFG consumption rate for Flare I-5 is from Condition No. 12.
Maximum hourly emission rates for Flares I-1, I-2, I-3, and I-4 are from Condition No. 30. Maximum hourly emission rates for Flare I-5 are from Condition No. 31.
[3] Emission Factor (lb/mmscf) = Maximum Hourly Emissions (lb/hr) / (Maximum LFG Consumption (scfm) x 60 / 1,000,000)
[4] Emissions (lb/day) = LFG Consumption Baseline (mmscf/day) x Emission Factor (lb/mmscf)

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Appendix D Baseline Emissions Flare Station

Table D.23 Flare Station GHG Emission Factors and Emissions

Stream ID[1]	Stream Max Capacity[1] (scfm)	Component[2]	Component Vol.%[1]	Component Flowrate[3] (scfm)	GHG	Emission Factor[4] (lb/mmBtu)	Emission Factor[5] (lb/mmscf)	Annual Emissions[6] (lb/yr)	Daily Emissions (lb/day)	MT/yr	CO2e Eq[4]	CO2e[7] (MT/yr)
Feed Gas Stream	6,000	CO_2	37.36%	2,241.60	CO_2	--	116,121.37	136,812,454	374,829	62,046.46	1	62,046.46
		CH_4	41.98%	2,518.80	CO_2	116.94	122,787	162,555,411	445,357	73,721.27	1	73,721.27
					CH_4	2.2E-03	2.31	3,058.17	8.38	1.39	25	34.67
					N_2O	2.20E-04	0.23	305.82	0.84	0.14	298	41.33
											Total CO2e (MT/yr)	135,843.74

[1] Feed Gas Stream flowrate, methane, and carbon dioxide content from PFD in Appendix B (page 8, Process Point 1).
[2] CO_2 in Feed Gas Stream is not combusted, and is "passed-though" to flares.
[3] Component Flowrate (scfm) = Stream Max Capacity (scfm) x Component Vol.%
[4] GHG calculations assume that emissions from the methane component of the tail gas streams may be calculated from the default emission factors for natural gas combustion.
Emission factors and CO2e Eq are from SCAQMD 'Combustion Emission Estimator'.
http://www.aqmd.gov/docs/default-source/permitting/ceqa-2017/ghg-estimator-(2018-11).xlsx?sfvrsn=6
[5] CO_2, Feed Gas
The CO_2 in the product gas streams passes through and is not combusted.
Emission Factor (lb/mmscf) = Density (lb/scf) x 1,000,000

Density (lb/scf) = MW / Molar Volume

CO_2 MW	44.01	lb/lbmol
Molar Volume	379	scf/lbmol, @ 60 Deg F

CH_4 Feed Gas
Emission Factor (lb/mmscf) = Emission Factor (lb/mmBtu) x HHV (mmBtu/mmscf)

HHV	1,050	mmBtu/mmscf

[6] Annual Emissions (lb/yr) = Component Flowrate (scfm) x 60 / 1,000,000 x Hours per Day x Days per Year x Emission Factor (lb/mmscf)

Hours per Day	24
Days per Year	365

[7] CO2e (MT/yr) = Annual Emissions (lb/yr) x CO2e Eq / 2,205

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Appendix D Project to Baseline GHG Comparison

Table D.24 Project to Baseline GHG Comparison - Device Breakdown

Emission Source		GHG Emissions (MT/yr)				
		CO_2	CH_4	N_2O	R	Total CO2e
[A]	**Baseline Existing LFG Flare Station Emissions[1]**	**135,768**	**1.39**	**0.14**	**--**	**135,844**
[B]	TOU[2] (from Tail Gas)	66,681	0.11	0.01	--	66,687
[C]	Product Gas Combustion[3]	69,061	1.28	0.13	--	69,132
[D] = [B] + [C]	**Total GHGs associated with Proposed Landfill Gas Usage[4]**	**135,742**	**1.39**	**0.14**	**--**	**135,818**
[E]	TOU[2] (from Pilot Gas)	8,195.16	0.15	0.02	--	8,204
[F]	Flare[5] (from Pilot Gas)	46	0.00	0.00	--	46.51
[G]	Emergency Engine[6]	18	0.00	0.00	--	18.45
[H]	Fugitive Emissions[7]	1	12.23	--	--	306.44
[I]	Construction[8]	40	0.00	0.00	0.02	40.70
[J]	Miscellaneous Operational Sources[9]	148	0.46	0.01	0.98	162.17
[K] = [B + C + E + F + G + H + I + J]	**Proposed Project**	**144,191**	**14.23**	**0.16**	**1.00**	**144,596**
[L] = [K] - [A]	**Proposed Project - Baseline Existing LFG Flare Emissions**	**8,423**	**12.85**	**0.02**	**1.00**	**8,752**
[M]					SCAQMD GHG Threshold	10,000
Is [L] > [M]?					**Significant?**	**No**

1 Baseline existing flare station emissions based on total inlet flow rate of 6,000 scfm, the equivalent fuel rate being directed to the proposed RNG facility (Appendix B (page 8, Process Point 1), Continuous operation. The total inlet flow rate was separated into CO_2 and CH_4 components in the stream, with CO_2 emissions directly emitted from the flare and CH_4 combustion estimated using natural gas GHG emission factors.

2 Proposed TOU: 2,309 scfm Process Gas 1 (~6.3 mmBtu/hr) + 883 scfm Process Gas 2 (~6.1 mmBtu/hr) + 280 scfm Supplemental Fuel (~17.6 mmBtu/hr), Continuous operation. The control of process gas is exclusively through the thermal oxidizer or the flare. Maximum GHG emissions results from the combustion of process gas from the TOU and Flare were evaluated in Appendix D. The combustion from the TOU, representing the maximum potential GHG emissions and normal operations is shown in this table.

3 Product gas combustion: 2,412 scfm product gas stream flowrate from PFD in Appendix B (page 8, Process Point 5), Continuous operation.

4 Note that the total GHGs associated with Proposed LFG usage is roughly equivalent to the GHGs from baseline LFG Flare Station

5 Proposed Flare: ~1.6 scfm Supplemental Fuel (0.1 mmBtu/hr), Continuous operation. Off-Spec Flare Gas not included since the flare will not be used concurrently with the Thermal Oxidizer, under which condition, only pilot gas consumption would occur at flare. Off-Spec Flare wil only be operate in case of a system upset or if RNG is off-spec.

6 Proposed Engine: Engine is natural gas fired and used for maintenance and testing.

7 Fugitive Emissions: Component counts from Tent Engineering and SoCalGas, using SCAQMD Guidelines for Reporting VOC Emissions from Component Leaks, Continuous Leaking https://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidelreportvocemiscomleaks.pdf

8 Construction emissions are amortized over 30 years.

9 Miscellaneous Operational Sources: Include Mobile, Area, and Energy sources from CalEEMod.

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Appendix D Project to Baseline GHG Comparison

Table D.25

Daily Emissions (RNG Normal Operating Case)

Emission Source		Criteria Pollutant Emissions on Peak Operating Day [8] (lb/day)					
		VOC	NO_x	CO	SO_x [9]	PM_{10} [10]	$PM_{2.5}$ [10]
[A]	Baseline Existing LFG Flare Emissions [1]	84.14	304.37	236.73	140.94	138.75	138.75
[B]	Proposed TOU[2]	4.33	25.27	57.75	124.26	5.16	5.16
[C]	Proposed Flare[3]	0.01	0.14	0.14	0.001	0.01	0.01
[D]	Proposed Engine[4]	0.66	4.01	6.69	0.02	0.40	0.40
[E]	Proposed Miscellaneous Operational Sources[5]	0.83	0.32	1.59	0.00	0.12	0.05
[F] = [B + C + D + E]	**Proposed Project[6]**	**5.83**	**29.74**	**66.17**	**124.28**	**5.69**	**5.62**
[G] = [F] - [A]	**Proposed Project - Baseline Existing LFG Flare Emissions**	**-78.31**	**-274.63**	**-170.56**	**-16.65**	**-133.07**	**-133.07**
[H]	SCAQMD Mass Daily Thresholds for Operation [7]	55	55	550	150	150	150
Is [G] > [H]?	Significant?	No	No	No	No	No	No

1 Baseline is calculated as the emissions from associated with the highest daily LFG consumption at the FRB Landfill's flare station for the prior two calendar years (2023, 2024).

2 Proposed TOU: 2,309 scfm Tail Gas 1 (~6.3 mmBtu/hr) + 883 scfm Tail Gas 2 (~6.1 mmBtu/hr) + 280 scfm Supplemental Fuel (~17.6 mmBtu/hr), 24 hours. Further information regarding tail gas compositions and fuel heat ratings are provided in Appendices B and D.

3 Proposed Flare: ~1.6 scfm Supplemental Fuel (0.1 mmBtu/hr), 24 hours.

4 Proposed Engine: Engine is natural gas fired and used for maintenance and testing.

5 Proposed Miscellaneous Operational Sources: Includes Mobile, Area, and Energy sources from CalEEMod.

6 Proposed Project: Proposed TOU + Proposed Flare + Proposed Engine + Proposed Miscellaneous Operational Sources.

7 Source: SCAQMD (2023).

8 Peak operating day with emergency engine usage is shown here. A typical day would not involve emergency generator usage, which is limited to maintenance and testing hours only.

9 SOx EF is based on daily/hourly BACT basis (85 ppm or 14.354 lb/mmscf). Proposed TOU SOx emissions include 100% of the Landfill Tail Gas SOx emissions + SOx from supplemental fuel. Proposed Flare SOx emissions include SOx from supplemental fuel.

10 Total PM10 / PM2.5 comprises fugitive dust plus engine exhaust.

APPENDIX E – OPERATIONAL AQIA MODELING RESULTS

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Appendix E Air Quality Impact Analysis

Source Locations

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Appendix E Air Quality Impact Analysis

Table E.1 Source Parameters

Source ID	Source Description	Source Type	Orientation	UTM E (m)	UTM N (m)	Release Height (ft)	Exit Temperature (Deg F)	Inside Diameter (ft)	Exhaust Flow (acfm)	Exit Velocity (mps)
FLARE[1]	Flare	Point	Vertical	434,255.01	3,730,882.74	50	1,018	11.77	150,000	7.003
ICE	CAT DG150 Backup Generator ICE	Point	Vertical	434,246.91	3,730,967.73	6.15	1,304	0.4167	1,177	43.852
TOU[1]	PEI Thermal Oxidizer - Pilot Gas	Point	Vertical	434,255.52	3,730,894.15	50	1,000	5.6	39,000	8.044

1. FLARE and TOU exit temperature, inside diameter, and exhaust flow rate are provided by Perenial (email 04/23/2024; Appendix B).
2. All other physical source parameters are from Equipment Data sheets (Appendix B).

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Appendix E Air Quality Impact Analysis

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Appendix E Air Quality Impact Analysis

Table E.2 Models

Dispersion Modeling
AERMOD v 24142
AERMET v 22112
AERMAP v 24142
Software Interface:
Lakes Environmental Software; AERMOD View™, Version 13.0.0

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Appendix E Air Quality Impact Analysis

Table E.3 Dispersion Model Options/Assumptions

Parameter	Value				Comments
Control Pathway					
Regulatory Options	Default	☒	Non-Default	☐	--
Output Type	Concentration	☒	Dry Deposition	☐	--
	Total Deposition	☐	Wet Deposition	☐	
Depletion Options	Dry Depletion	☐	Wet Depletion	☐	--
	Disable Dry Depletion	☐	Disable Wet Depletion	☐	
Pollutant	Other				--
Averaging Time Options	1-Hour (H1H); 8-Hour (H1H); 24-Hour (H1H); Annual (Avg)				Model output also includes the max annual average for each MET year.
Dispersion Coefficient	Rural	☒	Urban	☐	Please refer to Section 4.1.5 of the main document.
Terrain Height Options	Elevated		☒		--
	Non-Default Regulatory Options				
	Flat	☐	Flat & Elevated	☒	
Receptor Elevations / Hill Heights	Run AERMOD using the AERMAP Receptor Output file (*.ROU)				--

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Appendix E Air Quality Impact Analysis

Table E.3 Dispersion Model Options/Assumptions

Parameter	Value				Comments
Source Pathway					
Building Downwash	Include	☒	Exclude	☐	--
Background Concentrations	Include	☐	Exclude	☒	This project does not consider background concentrations.
Source Groups	CO1	Includes: FLCO18, ICECO1, TOCO18			--
	CO8	Includes: FLCO18, ICECO8, TOCO18			
	NO21	Includes: FLNO21, ICENO21, TONO21AN			
	NO2ANN	Includes: FLNO2AN, ICENO2AN, TONO21AN			
	PM24	Includes: FLPM24, ICEPM24, TOPM24AN			
	PMANN	Includes: FLPMAN, ICEPMAN, TOPM24AN			
	SO21	Includes: FLSO2124, ICESO21, TOSO21H24H			
	SO224	Includes: FLSO2124, ICESO224, TOSO21H24H			
	SO2ANN	Includes: FLSO2AN, ICESO2AN, TOSO2AN			
Urban Groups	\				Please refer to Section 4.1.5 of the main document.
Variable Emissions	N/A				Run assumes continuous operation.

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Appendix E Air Quality Impact Analysis

Table E.3 Dispersion Model Options/Assumptions

Parameter	Value				Comments
Receptor Pathway					
Flagpole Receptors	Include	☐	Exclude	☒	Per current South Coast AQMD guidance, all receptors should be set to ground-level.
Multi-Tier Receptor Grid	Grid Origin: Centroid of Sources Polygon				Onsite gridded receptors are disabled, but discrete receptors were placed on the administrative building on the landfill.
	Tier		Distance from Center (m)	Tier Spacing (m)	
	1 2		1000 5000	50 250	
Plant Boundary	Receptor Spacing: 10 m				

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Appendix E Air Quality Impact Analysis

Table E.3 Dispersion Model Options/Assumptions

Parameter	Value	Comments
Meteorology Pathway		
Meteorological Data	Station: Mission Viejo Years: 2017-2021 Base Elevation of Surface Station: 168 m	Meteorological data downloaded from the South Coast AQMD website.
Terrain Pathway		
Data File	USGS_NED_13_n34w118.tif	NED GEOTIFF Digital Terrain Files. Resolution: 1/3-arcsecond (10 meters).
AERMAP Domain Options	Not Specified ☐ User-Defined Domain ☒	Elevations and hill heights are calculated from a region measuring 10,000 meters by 10,000 meters centered on the facility. Source and building base elevations were set to 800 ft to match existing flare station elevation. This was done since the hill is going to be filled and leveled off with the existing flare station.

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Appendix E Air Quality Impact Analysis

Table E.4 AQIA Results

Standard	Background Data Source	2021	2022	2023	Background Concentration (Conc. Units)	Modeled Concentration (ug/m3)	Modeled Concentration (Conc. Units)	Bkg. + Modeled Concentration (Conc. Units)	Ambient Air Quality Standard (Conc. Units)	CEQA Significant Change Threshold (Conc. Units)	Result
NO2; Concentration Units = ppb											
California 1-Hr	SCAQMD; 17	67.1	53	50.9	67.1	31.21	16.59	83.7	180	--	Bkg. + Modeled Concentration < AAQS
California Annual	SCAQMD; 17	12.4	11.8	10.5	12.4	0.35	0.18	12.6	30	--	Bkg. + Modeled Concentration < AAQS
Federal Annual	SCAQMD; 17	12.4	11.8	10.5	12.4	0.35	0.18	12.6	53	--	Bkg. + Modeled Concentration < AAQS
SO2; Concentration Units = ppb											
California 1-Hr	EPA; Site ID 060371103	2.2	6.5	7.7	7.7	1.07E+02	40.8868	48.6	250	--	Bkg. + Modeled Concentration < AAQS
Federal 1-Hr	EPA; Site ID 060371103	2	2	2	2.0	7.95E+01	30.3715	32.4	75	--	Bkg. + Modeled Concentration < AAQS
California 24-Hr	EPA; Site ID 060371103	1.2	1.2	2.3	2.3	1.35E+01	5.1567	7.5	40	--	Bkg. + Modeled Concentration < AAQS
CO; Concentration Units = ppm											
California 1-Hr	SCAQMD; 17	2.1	2.4	2.5	2.5	5.20E+01	0.0454	2.5	20	--	Bkg. + Modeled Concentration < AAQS
Federal 1-Hr	SCAQMD; 17	2.1	2.4	2.5	2.5	5.20E+01	0.0454	2.5	35	--	Bkg. + Modeled Concentration < AAQS
California 8-Hr	SCAQMD; 17	1.5	1.4	1.6	1.6	3.03E+01	0.0265	1.6	9	--	Bkg. + Modeled Concentration < AAQS
Federal 8-Hr	SCAQMD; 17	1.5	1.4	1.6	1.6	3.03E+01	0.0265	1.6	9	--	Bkg. + Modeled Concentration < AAQS
PM10; Concentration Units = ug/m3											

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24-Hr	SCAQMD; 17	115	90	146	146	9.13E-01	0.913	--	--	2.5	Modeled Concentration < CEQA Significant Change Threshold
Annual	SCAQMD; 17	22.9	22.3	24	24	7.06E-02	0.071	--	--	1	Modeled Concentration < CEQA Significant Change Threshold
PM2.5; Concentration Units = ug/m3											
24-Hr	SCAQMD; 17	36.70	22.10	22.00	26.93	9.13E-01	0.913	--	--	2.5	Modeled Concentration < CEQA Significant Change Threshold

C (ppb) = C (ug/m3) x 24.45 / MW
C (ppm) = C (ug/m3) x 0.02445 / MW

MW NO2	46
MW SO2	64
MW CO	28

'SCAQMD' data from the District's historical Air Quality Data Tables.
http://www.aqmd.gov/home/air-quality/historical-air-quality-data/historical-data-by-year
'EPA' data from EPA's Monitor Values Report.
https://www.epa.gov/outdoor-air-quality-data/monitor-values-report

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Appendix E Air Quality Impact Analysis

Table E.5 AQIA Results

Pollutant	Averaging Time	Federal or State Standard	Modeled Concentration (Concentration Units)	Background Concentration (Concentration Units)	Modeled + Background Concentration (Concentration Units)	CEQA Threshold (Concentration Units)	Significance
NO_2 (Concentration Units = ppb)	1-Hour[F]	California[1]	16.591	67.1	83.7	180	No
	Annual[E]	Federal	0.184	12.4	12.6	53	No
		California	0.184	12.4	12.6	30	No
CO (Concentration Units = ppm)	1-Hour[F]	Federal	0.045	2.5	2.5	35	No
		California	0.045	2.5	2.5	20	No
	8-Hour[F]	Federal	0.026	1.6	1.6	9	No
		California	0.026	1.6	1.6	9	No
SO_2 (Concentration Units = ppb)	1-Hour[E]	Federal	30.371	2	32.4	75	No
		California	40.887	7.7	48.6	250	No
	24-Hour[E]	California	5.157	2.3	7.5	40	No
PM_{10} (Concentration Units = µg/m3)	24-Hour[F]	SCAQMD CEQA Significant Change Threshold	0.913	–	–	2.5	No
	Annual[E]		0.071	–	–	1	
$PM_{2.5}$ (Concentration Units = µg/m3)	24-Hour[F]		0.913	–	–	2.5	

1. The modeled concentration presented is the model predicted maximum hourly value using full NO_2 conversion.

ELEVATED TERRAIN AERMOD RUN

C:\Lakes\AERMOD View\Bowerman_RNG_Facility_CEQA_HRA\Bowerman_RNG_Fac Air Quality Impact Analysis - FRB RNG Facility Operational Emissions

Concentration - Source Group: CO1

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	50.15632	ug/m^3	433997.53	3731155.50	304.82	0.00	541.06	3/18/2021, 5
8-HR	1ST	23.47395	ug/m^3	434198.03	3731003.57	238.42	0.00	541.06	12/30/2021, 8
24-HR	1ST	11.50703	ug/m^3	434198.03	3731003.57	238.42	0.00	541.06	12/30/2021, 24
1-HR	4TH	37.79519	ug/m^3	434275.31	3731022.10	228.16	0.00	541.06	12/8/2019, 20
1-HR	8TH	37.43145	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	5/6/2020, 21
ANNUAL		1.79817	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y1		1.84644	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y2		1.81827	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y3		1.82922	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y4		1.74200	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y5		1.75490	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	

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Concentration - Source Group: CO8

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	50.15632	ug/m^3	433997.53	3731155.50	304.82	0.00	541.06	3/18/2021, 5
8-HR	1ST	23.47395	ug/m^3	434198.03	3731003.57	238.42	0.00	541.06	12/30/2021, 8
24-HR	1ST	11.50703	ug/m^3	434198.03	3731003.57	238.42	0.00	541.06	12/30/2021, 24
1-HR	4TH	37.79519	ug/m^3	434275.31	3731022.10	228.16	0.00	541.06	12/8/2019, 20
1-HR	8TH	37.43145	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	5/6/2020, 21
ANNUAL		1.79817	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y1		1.84644	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y2		1.81827	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y3		1.82922	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y4		1.74200	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y5		1.75490	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	

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Concentration - Source Group: NO21

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	23.41134	ug/m^3	434275.31	3731022.10	228.16	0.00	541.06	7/16/2019, 2
8-HR	1ST	14.08170	ug/m^3	434198.03	3731003.57	238.42	0.00	541.06	12/30/2021, 8
24-HR	1ST	6.89192	ug/m^3	434198.03	3731003.57	238.42	0.00	541.06	12/30/2021, 24
1-HR	4TH	22.67280	ug/m^3	434275.31	3731022.10	228.16	0.00	541.06	12/8/2019, 20
1-HR	8TH	22.45453	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	5/6/2020, 21
ANNUAL		1.05579	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y1		1.08662	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y2		1.06514	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y3		1.07876	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y4		1.02296	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y5		1.02549	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	

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Concentration - Source Group: NO2ANN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	21.81451	ug/m^3	433997.53	3731155.50	304.82	0.00	541.06	3/18/2021, 5
8-HR	1ST	6.65447	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	12/31/2018, 8
24-HR	1ST	2.75005	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	1/6/2019, 24
1-HR	4TH	16.20320	ug/m^3	433947.53	3731155.50	302.91	0.00	541.06	3/18/2021, 5
1-HR	8TH	14.48830	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	2/3/2019, 24
ANNUAL		0.31931	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y1		0.28338	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y2		0.32152	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y3		0.34613	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y4		0.34610	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y5		0.30966	ug/m^3	433947.53	3731055.50	310.64	0.00	541.06	

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Concentration - Source Group: PM24

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	4.46776	ug/m^3	433997.53	3731155.50	304.82	0.00	541.06	3/18/2021, 5
8-HR	1ST	1.39414	ug/m^3	434198.03	3731003.57	238.42	0.00	541.06	12/30/2021, 8
24-HR	1ST	0.69062	ug/m^3	434234.47	3731049.24	233.99	0.00	541.06	5/11/2018, 24
1-HR	4TH	3.30429	ug/m^3	433947.53	3731155.50	302.91	0.00	541.06	3/18/2021, 5
1-HR	8TH	2.96178	ug/m^3	433997.53	3731155.50	304.82	0.00	541.06	9/23/2020, 5
ANNUAL		0.11102	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y1		0.11354	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y2		0.11271	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y3		0.11206	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y4		0.10752	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	
ANNUAL Y5		0.10925	ug/m^3	434276.19	3731014.11	227.29	0.00	541.06	

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Concentration - Source Group: PMANN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	4.44838	ug/m^3	433997.53	3731155.50	304.82	0.00	541.06	3/18/2021, 5
8-HR	1ST	1.35711	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	12/31/2018, 8
24-HR	1ST	0.56092	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	1/6/2019, 24
1-HR	4TH	3.30425	ug/m^3	433947.53	3731155.50	302.91	0.00	541.06	3/18/2021, 5
1-HR	8TH	2.95506	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	2/3/2019, 24
ANNUAL		0.06510	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y1		0.05777	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y2		0.06555	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y3		0.07057	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y4		0.07057	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y5		0.06313	ug/m^3	433947.53	3731055.50	310.64	0.00	541.06	

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Concentration - Source Group: SO21

Averagi ng Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	107.02469	ug/m^3	433997.53	3731155.50	304.82	0.00	541.06	3/18/2021, 5
8-HR	1ST	32.65405	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	12/31/2018, 8
24-HR	1ST	13.49799	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	1/6/2019, 24
1-HR	4TH	79.49999	ug/m^3	433947.53	3731155.50	302.91	0.00	541.06	3/18/2021, 5
1-HR	8TH	71.10990	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	2/3/2019, 24
ANNUAL		1.56608	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y1		1.38974	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y2		1.57678	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y3		1.69780	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y4		1.69753	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y5		1.51862	ug/m^3	433947.53	3731055.50	310.64	0.00	541.06	

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Concentration - Source Group: SO224

Averagi ng Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	107.02469	ug/m^3	433997.53	3731155.50	304.82	0.00	541.06	3/18/2021, 5
8-HR	1ST	32.65405	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	12/31/2018, 8
24-HR	1ST	13.49799	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	1/6/2019, 24
1-HR	4TH	79.49999	ug/m^3	433947.53	3731155.50	302.91	0.00	541.06	3/18/2021, 5
1-HR	8TH	71.10990	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	2/3/2019, 24
ANNUAL		1.56608	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y1		1.38974	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y2		1.57678	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y3		1.69780	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y4		1.69753	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y5		1.51862	ug/m^3	433947.53	3731055.50	310.64	0.00	541.06	

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Concentration - Source Group: SO2ANN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	75.61649	ug/m^3	433997.53	3731155.50	304.82	0.00	541.06	3/18/2021, 5
8-HR	1ST	23.07140	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	12/31/2018, 8
24-HR	1ST	9.53685	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	1/6/2019, 24
1-HR	4TH	56.16998	ug/m^3	433947.53	3731155.50	302.91	0.00	541.06	3/18/2021, 5
1-HR	8TH	50.24203	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	2/3/2019, 24
ANNUAL		1.10647	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y1		0.98187	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y2		1.11402	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y3		1.19953	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y4		1.19934	ug/m^3	433947.53	3731005.50	309.63	0.00	541.06	
ANNUAL Y5		1.07293	ug/m^3	433947.53	3731055.50	310.64	0.00	541.06	

FLAT TERRAIN AERMOD RUN

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Concentration - Source Group: CO1

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	52.03446	ug/m^3	434275.31	3731022.10	168.00	0.00	168.00	7/16/2019, 2
8-HR	1ST	30.31783	ug/m^3	434198.03	3731003.57	168.00	0.00	168.00	12/30/2021, 8
24-HR	1ST	15.08990	ug/m^3	434234.47	3731049.24	168.00	0.00	168.00	5/11/2018, 24
1-HR	4TH	50.39293	ug/m^3	434275.31	3731022.10	168.00	0.00	168.00	12/8/2019, 20
1-HR	8TH	49.90842	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	5/6/2020, 21
ANNUAL		2.38572	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y1		2.45197	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y2		2.40951	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y3		2.43031	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y4		2.30982	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y5		2.32700	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	

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Concentration - Source Group: CO8

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	52.03446	ug/m^3	434275.31	3731022.10	168.00	0.00	168.00	7/16/2019, 2
8-HR	1ST	30.31783	ug/m^3	434198.03	3731003.57	168.00	0.00	168.00	12/30/2021, 8
24-HR	1ST	15.08990	ug/m^3	434234.47	3731049.24	168.00	0.00	168.00	5/11/2018, 24
1-HR	4TH	50.39293	ug/m^3	434275.31	3731022.10	168.00	0.00	168.00	12/8/2019, 20
1-HR	8TH	49.90842	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	5/6/2020, 21
ANNUAL		2.38572	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y1		2.45197	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y2		2.40951	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y3		2.43031	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y4		2.30982	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y5		2.32700	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	

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Concentration - Source Group: NO21

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	31.21475	ug/m^3	434275.31	3731022.10	168.00	0.00	168.00	7/16/2019, 2
8-HR	1ST	18.18725	ug/m^3	434198.03	3731003.57	168.00	0.00	168.00	12/30/2021, 8
24-HR	1ST	8.96233	ug/m^3	434234.47	3731049.24	168.00	0.00	168.00	5/11/2018, 24
1-HR	4TH	30.23001	ug/m^3	434275.31	3731022.10	168.00	0.00	168.00	12/8/2019, 20
1-HR	8TH	29.93927	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	5/6/2020, 21
ANNUAL		1.40204	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y1		1.44403	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y2		1.41302	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y3		1.43420	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y4		1.35777	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y5		1.36119	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	

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Concentration - Source Group: NO2ANN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	2.96562	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 7
8-HR	1ST	1.30024	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 8
24-HR	1ST	0.83944	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 24
1-HR	4TH	2.44431	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	2/3/2020, 24
1-HR	8TH	2.18542	ug/m^3	434097.53	3730705.50	168.00	0.00	168.00	2/11/2020, 7
ANNUAL		0.10891	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y1		0.10393	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y2		0.11792	ug/m^3	434280.14	3731005.18	168.00	0.00	168.00	
ANNUAL Y3		0.10243	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y4		0.10458	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y5		0.12284	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	

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Concentration - Source Group: PM24

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	3.09038	ug/m^3	434275.31	3731022.10	168.00	0.00	168.00	7/16/2019, 2
8-HR	1ST	1.80061	ug/m^3	434198.03	3731003.57	168.00	0.00	168.00	12/30/2021, 8
24-HR	1ST	0.91278	ug/m^3	434234.47	3731049.24	168.00	0.00	168.00	5/11/2018, 24
1-HR	4TH	2.99289	ug/m^3	434275.31	3731022.10	168.00	0.00	168.00	12/8/2019, 20
1-HR	8TH	2.96413	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	5/6/2020, 21
ANNUAL		0.14706	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y1		0.15058	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y2		0.14908	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y3		0.14871	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y4		0.14232	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	
ANNUAL Y5		0.14461	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	

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Concentration - Source Group: PMANN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	0.60387	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 7
8-HR	1ST	0.26475	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 8
24-HR	1ST	0.17013	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 24
1-HR	4TH	0.49779	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	2/3/2020, 24
1-HR	8TH	0.44473	ug/m^3	434097.53	3730705.50	168.00	0.00	168.00	2/11/2020, 7
ANNUAL		0.01993	ug/m^3	434347.53	3731055.50	168.00	0.00	168.00	
ANNUAL Y1		0.02048	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y2		0.02164	ug/m^3	434297.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y3		0.02044	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y4		0.01914	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y5		0.02201	ug/m^3	434276.19	3731014.11	168.00	0.00	168.00	

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Concentration - Source Group: SO21

Averagi ng Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	14.51039	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 7
8-HR	1ST	6.36144	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 8
24-HR	1ST	4.07193	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 24
1-HR	4TH	11.96336	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	2/3/2020, 24
1-HR	8TH	10.68148	ug/m^3	434097.53	3730705.50	168.00	0.00	168.00	2/11/2020, 7
ANNUAL		0.47005	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y1		0.48463	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y2		0.50898	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y3		0.48256	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y4		0.45172	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y5		0.48692	ug/m^3	434297.53	3731005.50	168.00	0.00	168.00	

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Concentration - Source Group: SO224

Averagi ng Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	14.51039	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 7
8-HR	1ST	6.36144	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 8
24-HR	1ST	4.07193	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 24
1-HR	4TH	11.96336	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	2/3/2020, 24
1-HR	8TH	10.68148	ug/m^3	434097.53	3730705.50	168.00	0.00	168.00	2/11/2020, 7
ANNUAL		0.47005	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y1		0.48463	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y2		0.50898	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y3		0.48256	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y4		0.45172	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y5		0.48692	ug/m^3	434297.53	3731005.50	168.00	0.00	168.00	

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Concentration - Source Group: SO2ANN

Averaging Period	Rank	Peak	Units	X (m)	Y (m)	ZELEV (m)	ZFLAG (m)	ZHILL (m)	Peak Date, Start
1-HR	1ST	10.25114	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 7
8-HR	1ST	4.49406	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 8
24-HR	1ST	2.87527	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	10/15/2018, 24
1-HR	4TH	8.45115	ug/m^3	434147.53	3730755.50	168.00	0.00	168.00	2/3/2020, 24
1-HR	8TH	7.54519	ug/m^3	434097.53	3730705.50	168.00	0.00	168.00	2/11/2020, 7
ANNUAL		0.33142	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y1		0.34174	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y2		0.35897	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y3		0.34019	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y4		0.31842	ug/m^3	434347.53	3731005.50	168.00	0.00	168.00	
ANNUAL Y5		0.34199	ug/m^3	434297.53	3731005.50	168.00	0.00	168.00	

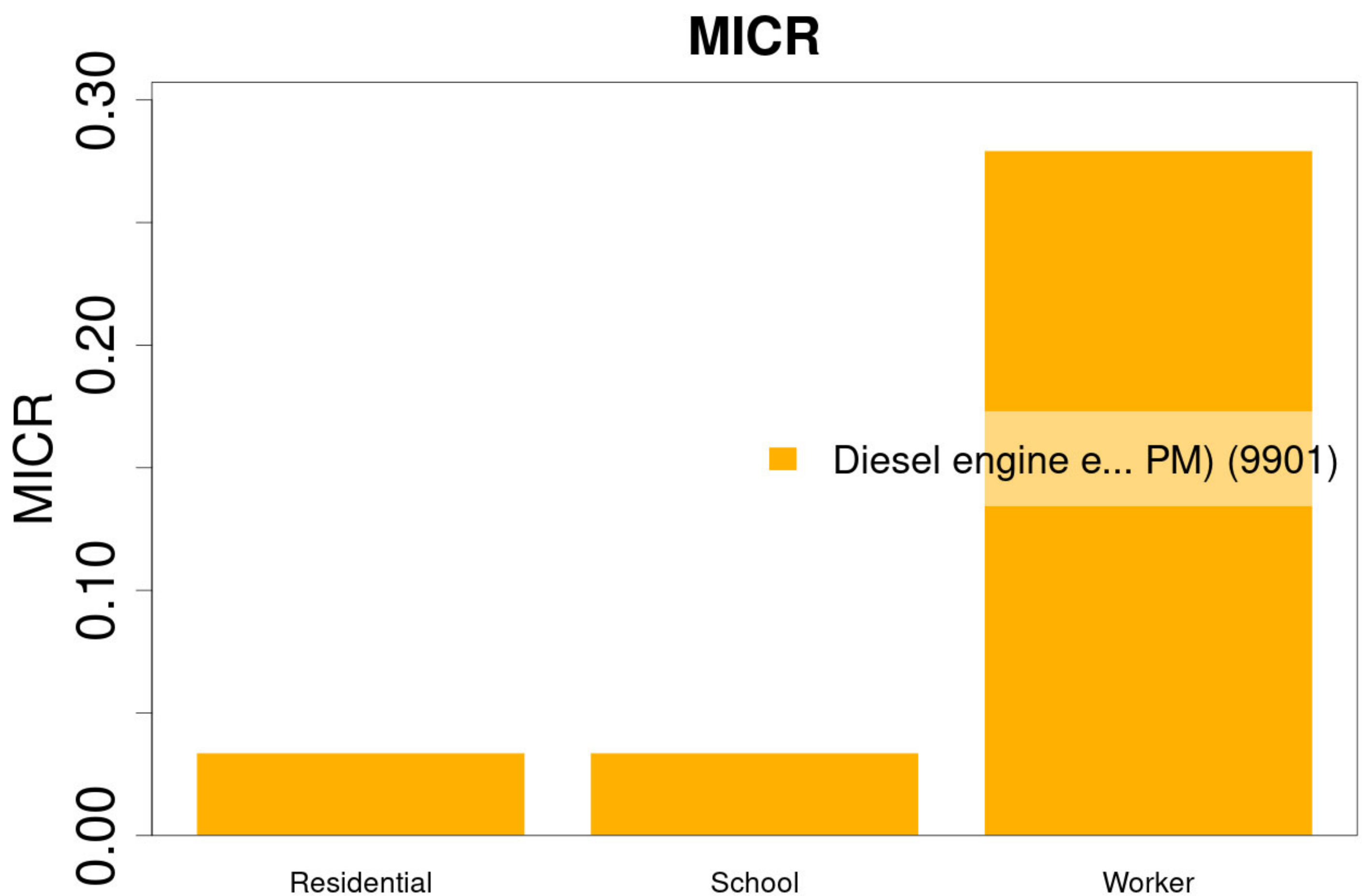
APPENDIX F – OPERATIONAL HRA MODELING RESULTS

Appendix F-1
Mobile Sources
Rule 1401 HRA Tier 2 Calculator Output
Appendix F-2
Stationary Sources
HARP2 Output - Cancer Risk
HARP2 Output - Chronic Risk
HARP2 Output - Acute Risk

Description	Value
Date & time f	2025-05-27 12:30:14
Facility Name	Facility
Deemed com	2025-05-27
Facility type s	General Non-Combustion Volume Source Equipment
Equipment ch	Building Area ≤ 3,000 ft2 & height ≤ 20 ft
Project durati	30 yrs (25 yrs for workers)
Hours of oper	24
Days of opera	7
Residential re	1000
School recept	1000
Worker recep	66.72
Meteorologic	MSVJ

Toxic Air Cont	Max hourly EI	Max annual ER, lb/yr
Diesel engine	0.00020833	1.9

Receptor	Annual mean	MICR from Di	MICR, per mil	HQ|Chronic	HQ|Chronic 8	Max hourly cc	HQ|Acute
Residential	4.5211E-05	0.03368815	0.03368815	9.0421E-06		0.00219	
School	4.5211E-05	0.03368815	0.03368815	9.0421E-06		0.00219	
Worker	0.00454574	0.27931769	0.27931769	0.00090915		0.0803	

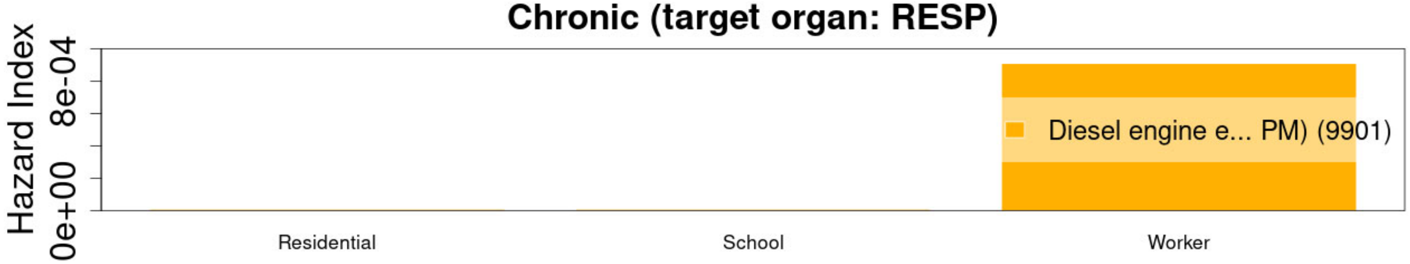


Receptor	MICR, per million	HQ|Chronic	HQ|Chronic 8hr	HQ|Acute
Residential	3.37E-02	9.04E-06		
School	3.37E-02	9.04E-06		
Worker	2.79E-01	9.09E-04		

Toxic Air Cont	Contribution_	maxImpacted	ReceptorType	Acute REL ug/	Chronic REL u	Chronic 8hr REL ug/m3
Diesel engine	9.0421E-06	RESP	HI Residential|Chronic		5	
Diesel engine	9.0421E-06	RESP	HI School|Chronic		5	
Diesel engine	0.00090915	RESP	HI Worker|Chronic		5	

Acute

Chronic (target organ: RESP)



Chronic 8hr

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Maximum Cancer Risk by Pollutant at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Operations - Elevated Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3162	receptor #	3136	receptor #	6
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,276	3,731,014	433,238	3,730,039	434,246	3,731,163
		30-Year Cancer Risk	Contribution (%)	30-Year Cancer Risk	Contribution (%)	25-Year Cancer Risk	Contribution (%)
-	ALL	1.51E-07	100%	6.97E-09	100%	2.54E-09	100%
50000	Formaldehyde	5.33E-08	35.26%	2.19E-09	31.40%	6.72E-10	26.43%
106990	1,3-Butadiene	4.90E-08	32.43%	2.00E-09	28.75%	6.03E-10	23.69%
71432	Benzene	2.66E-08	17.62%	1.33E-09	19.12%	8.01E-10	31.51%
1151	PAH	1.27E-08	8.42%	9.74E-10	13.98%	1.88E-10	7.41%
75070	Acetaldehyde	3.47E-09	2.30%	1.43E-10	2.05%	4.46E-11	1.75%
75014	Vinyl Chloride	1.29E-09	0.86%	8.86E-11	1.27%	8.57E-11	3.37%
91203	Naphthalene	1.47E-09	0.97%	6.12E-11	0.88%	2.03E-11	0.80%
107062	1,2-Dichloroethane	6.99E-10	0.46%	4.88E-11	0.70%	4.82E-11	1.89%
127184	Tetrachloroethene	5.39E-10	0.36%	4.03E-11	0.58%	4.23E-11	1.66%
106934	Ethylene Dibromide	6.55E-10	0.43%	2.68E-11	0.38%	8.06E-12	0.32%
79345	1,1,2,2-Tetrachloroethane	6.23E-10	0.41%	2.55E-11	0.37%	7.67E-12	0.30%
56235	Carbon Tetrachloride	3.28E-10	0.22%	1.34E-11	0.19%	4.03E-12	0.16%
75092	Methylene Chloride	1.00E-10	0.07%	6.89E-12	0.10%	6.69E-12	0.26%

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3162	receptor #	3136	receptor #	6
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,276	3,731,014	433,238	3,730,039	434,246	3,731,163
		30-Year Cancer Risk	Contribution (%)	30-Year Cancer Risk	Contribution (%)	25-Year Cancer Risk	Contribution (%)
100414	Ethyl Benzene	9.18E-11	0.06%	6.69E-12	0.10%	5.51E-12	0.22%
79005	1,1,2-Trichloroethane	1.07E-10	0.07%	4.39E-12	0.06%	1.32E-12	0.05%
79016	Trichloroethylene	4.40E-11	0.03%	3.28E-12	0.05%	3.44E-12	0.14%
67663	Chloroform	3.63E-11	0.02%	1.63E-12	0.02%	7.24E-13	0.03%
75343	1,1-Dichloroethane	3.97E-12	0.00%	2.97E-13	0.00%	3.11E-13	0.01%
75354	1,1-Dichloroethene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
71556	1,1,1-Trichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
107028	Acrolein	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
7664417	Ammonia	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
205992	Benzo(b)fluoranthene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
108907	Chlorobenzene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
218019	Chrysene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
110543	Hexane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
67561	Methanol	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
100425	Styrene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
108883	Toluene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
1330207	Xylenes	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%

Cancer Risk by Source for All Pollutants Combined at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Operations - Elevated Terrain AERMOD Run

Sources	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
	receptor #	3162	receptor #	3136	receptor #	6
	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
	434,276	3,731,014	433,238	3,730,039	434,246	3,731,163
	30-Year Cancer Risk	Contribution (%)	30-Year Cancer Risk	Contribution (%)	25-Year Cancer Risk	Contribution (%)
ALL	1.51E-07	100%	6.97E-09	100%	2.54E-09	100%
TOU	2.22E-08	14.69%	1.66E-09	23.80%	9.54E-10	37.49%
FLARE	4.08E-10	0.27%	5.76E-11	0.83%	9.80E-12	0.39%
ICE	1.28E-07	85.04%	5.25E-09	75.38%	1.58E-09	62.12%

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Maximum Chronic Hazard Index by Pollutant at PMI, MEIR, MEIW and Sensitive Receptor
FRB Landfill RNG Facility - Operations - Elevated Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3162	receptor #	3136	receptor #	6	receptor #	6
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,276	3,731,014	433,238	3,730,039	434,246	3,731,163	434,246	3,731,163
		Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic 8-hr Hazard Index	Contribution (%)
-	ALL	2.29E-03	100%	9.53E-05	100%	2.97E-04	100%	1.69E-04	100%
107028	Acrolein	1.73E-03	75.50%	7.13E-05	74.79%	2.12E-04	71.34%	1.06E-04	62.54%
50000	Formaldehyde	5.24E-04	22.83%	2.15E-05	22.58%	6.32E-05	21.28%	6.32E-05	37.30%
71432	Benzene	1.65E-04	7.19%	8.25E-06	8.66%	4.75E-05	15.98%	4.75E-05	28.02%
106990	1,3-Butadiene	7.59E-05	3.31%	3.10E-06	3.26%	8.93E-06	3.00%	1.98E-06	1.17%
7664417	Ammonia	3.05E-05	1.33%	2.15E-06	2.26%	2.06E-05	6.92%	0.00E+00	0.00%
106934	Ethylene Dibromide	6.09E-06	0.27%	2.49E-07	0.26%	7.16E-07	0.24%	0.00E+00	0.00%
75070	Acetaldehyde	4.61E-06	0.20%	1.90E-07	0.20%	5.66E-07	0.19%	2.64E-07	0.16%
91203	Naphthalene	2.53E-06	0.11%	1.05E-07	0.11%	3.34E-07	0.11%	0.00E+00	0.00%
108883	Toluene	1.63E-06	0.07%	1.11E-07	0.12%	1.03E-06	0.35%	5.19E-07	0.31%
127184	Tetrachloroethene	1.36E-06	0.06%	1.02E-07	0.11%	1.02E-06	0.34%	0.00E+00	0.00%
1330207	Xylenes	6.80E-07	0.03%	4.86E-08	0.05%	4.69E-07	0.16%	0.00E+00	0.00%
108907	Chlorobenzene	3.89E-07	0.02%	2.91E-08	0.03%	2.92E-07	0.10%	0.00E+00	0.00%
75092	Methylene Chloride	1.33E-07	0.01%	9.15E-09	0.01%	8.49E-08	0.03%	0.00E+00	0.00%
67561	Methanol	1.75E-07	0.01%	7.16E-09	0.01%	2.06E-08	0.01%	0.00E+00	0.00%

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Maximum Chronic Hazard Index by Pollutant at PMI, MEIR, MEIW and Sensitive Receptor
FRB Landfill RNG Facility - Operations - Elevated Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3162	receptor #	3136	receptor #	6	receptor #	6
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,276	3,731,014	433,238	3,730,039	434,246	3,731,163	434,246	3,731,163
		Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic 8-hr Hazard Index	Contribution (%)
56235	Carbon Tetrachloride	1.02E-07	0.00%	4.15E-09	0.00%	1.20E-08	0.00%	0.00E+00	0.00%
107062	1,2-Dichloroethane	4.51E-08	0.00%	3.15E-09	0.00%	2.97E-08	0.01%	0.00E+00	0.00%
75354	1,1-Dichloroethene	2.04E-08	0.00%	1.52E-09	0.00%	1.53E-08	0.01%	0.00E+00	0.00%
79016	Trichloroethylene	1.95E-08	0.00%	1.45E-09	0.00%	1.46E-08	0.00%	0.00E+00	0.00%
100414	Ethyl Benzene	9.81E-09	0.00%	7.15E-10	0.00%	5.63E-09	0.00%	0.00E+00	0.00%
67663	Chloroform	1.18E-08	0.00%	5.30E-10	0.00%	2.26E-09	0.00%	0.00E+00	0.00%
100425	Styrene	3.02E-09	0.00%	1.23E-10	0.00%	3.55E-10	0.00%	0.00E+00	0.00%
110543	Hexane	1.11E-09	0.00%	8.34E-11	0.00%	8.32E-10	0.00%	0.00E+00	0.00%
71556	1,1,1-Trichloroethane	9.68E-10	0.00%	7.23E-11	0.00%	7.25E-10	0.00%	0.00E+00	0.00%
75343	1,1-Dichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
79005	1,1,2-Trichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
79345	1,1,2,2-Tetrachloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
205992	Benzo(b)fluoranthene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
218019	Chrysene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
1151	PAH	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
75014	Vinyl Chloride	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%

Chronic Hazard Index by Source for All Pollutants Combined at PMI, MEIR, MEIW and Sensitive Receptor
FRB Landfill RNG Facility - Operations - Elevated Terrain AERMOD Run

Sources	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)		Maximally Exposed Individual Worker (MEIW)	
	receptor #	3162	receptor #	3136	receptor #	6	receptor #	6
	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
	434,276	3,731,014	433,238	3,730,039	434,246	3,731,163	434,246	3,731,163
	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic 8-hr Hazard Index	Contribution (%)
ALL	2.29E-03	100%	9.53E-05	100%	2.97E-04	100%	1.69E-04	100%
ICE	2.25E-03	98.12%	9.20E-05	96.60%	2.65E-04	89.13%	1.63E-04	96.00%
TOU	4.44E-05	1.93%	3.31E-06	3.48%	3.32E-05	11.19%	3.32E-05	19.62%
FLARE	2.61E-07	0.01%	3.69E-08	0.04%	2.11E-07	0.07%	1.90E-07	0.11%

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Maximum Acute Hazard Index by Pollutant at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Operations - Elevated Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3208	receptor #	3141	receptor #	3132
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,275	3,731,022	433,275	3,729,974	434,185	3,731,019
		Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)
-	ALL	3.38E-01	100%	1.24E-02	100%	2.97E-01	100%
107028	Acrolein	2.48E-01	73.46%	9.06E-03	73.39%	2.18E-01	73.46%
50000	Formaldehyde	8.80E-02	26.04%	3.21E-03	26.00%	7.72E-02	26.04%
75070	Acetaldehyde	1.40E-03	0.42%	5.13E-05	0.42%	1.23E-03	0.42%
7664417	Ammonia	2.62E-04	0.08%	2.23E-05	0.18%	2.27E-04	0.08%
108883	Toluene	2.84E-05	0.01%	1.88E-06	0.02%	2.47E-05	0.01%
1330207	Xylenes	2.45E-06	0.00%	2.38E-07	0.00%	2.11E-06	0.00%
127184	Tetrachloroethene	4.38E-08	0.00%	1.97E-08	0.00%	3.34E-08	0.00%
100425	Styrene	1.33E-07	0.00%	4.86E-09	0.00%	1.17E-07	0.00%
75014	Vinyl Chloride	1.02E-08	0.00%	6.76E-10	0.00%	8.83E-09	0.00%
106990	1,3-Butadiene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
75354	1,1-Dichloroethene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
75343	1,1-Dichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
107062	1,2-Dichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
71556	1,1,1-Trichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
79005	1,1,2-Trichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3208	receptor #	3141	receptor #	3132
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,275	3,731,022	433,275	3,729,974	434,185	3,731,019
		Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)
79345	1,1,2,2-Tetrachloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
71432	Benzene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
205992	Benzo(b)fluoranthene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
56235	Carbon Tetrachloride	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
108907	Chlorobenzene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
67663	Chloroform	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
218019	Chrysene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
100414	Ethyl Benzene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
106934	Ethylene Dibromide	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
110543	Hexane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
75092	Methylene Chloride	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
67561	Methanol	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
91203	Naphthalene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
1151	PAH	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
79016	Trichloroethylene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%

Target Organ(s)	Target Organ(s)	Target Organ(s)
EYE	EYE	EYE

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Acute Hazard Index by Source for All Pollutants Combined at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Operations - Elevated Terrain AERMOD Run

Sources	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
	receptor #	3208	receptor #	3141	receptor #	3132
	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
	434,275	3,731,022	433,275	3,729,974	434,185	3,731,019
	Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)
ALL	3.38E-01	100%	1.24E-02	100%	2.97E-01	100%
ICE	3.38E-01	99.98%	1.23E-02	99.72%	2.97E-01	99.98%
TOU	7.35E-05	0.02%	3.31E-05	0.27%	5.61E-05	0.02%
FLARE	7.97E-07	0.00%	7.39E-07	0.01%	6.18E-07	0.00%

Target Organ(s)	Target Organ(s)	Target Organ(s)
EYE	EYE	EYE

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Maximum Cancer Risk by Pollutant at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Operations - Flat Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3162	receptor #	3136	receptor #	6
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,276	3,731,014	433,238	3,730,039	434,246	3,731,163
		30-Year Cancer Risk	Contribution (%)	30-Year Cancer Risk	Contribution (%)	25-Year Cancer Risk	Contribution (%)
-	ALL	2.00E-07	100%	9.02E-09	100%	2.65E-09	100%
50000	Formaldehyde	7.09E-08	35.49%	2.91E-09	32.23%	7.12E-10	26.83%
106990	1,3-Butadiene	6.52E-08	32.65%	2.66E-09	29.53%	6.39E-10	24.09%
71432	Benzene	3.50E-08	17.53%	1.69E-09	18.79%	8.25E-10	31.07%
1151	PAH	1.62E-08	8.09%	1.15E-09	12.80%	1.91E-10	7.21%
75070	Acetaldehyde	4.62E-09	2.31%	1.90E-10	2.10%	4.72E-11	1.78%
75014	Vinyl Chloride	1.66E-09	0.83%	1.07E-10	1.18%	8.71E-11	3.28%
91203	Naphthalene	1.95E-09	0.98%	8.11E-11	0.90%	2.14E-11	0.81%
107062	1,2-Dichloroethane	8.94E-10	0.45%	5.85E-11	0.65%	4.89E-11	1.84%
127184	Tetrachloroethene	6.86E-10	0.34%	4.78E-11	0.53%	4.29E-11	1.62%
106934	Ethylene Dibromide	8.72E-10	0.44%	3.56E-11	0.40%	8.55E-12	0.32%
79345	1,1,2,2-Tetrachloroethane	8.30E-10	0.42%	3.39E-11	0.38%	8.13E-12	0.31%
56235	Carbon Tetrachloride	4.37E-10	0.22%	1.78E-11	0.20%	4.28E-12	0.16%
75092	Methylene Chloride	1.29E-10	0.06%	8.28E-12	0.09%	6.80E-12	0.26%

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3162	receptor #	3136	receptor #	6
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,276	3,731,014	433,238	3,730,039	434,246	3,731,163
		30-Year Cancer Risk	Contribution (%)	30-Year Cancer Risk	Contribution (%)	25-Year Cancer Risk	Contribution (%)
100414	Ethyl Benzene	1.18E-10	0.06%	8.07E-12	0.09%	5.61E-12	0.21%
79005	1,1,2-Trichloroethane	1.43E-10	0.07%	5.84E-12	0.06%	1.40E-12	0.05%
79016	Trichloroethylene	5.59E-11	0.03%	3.90E-12	0.04%	3.50E-12	0.13%
67663	Chloroform	4.81E-11	0.02%	2.12E-12	0.02%	7.53E-13	0.03%
75343	1,1-Dichloroethane	5.05E-12	0.00%	3.52E-13	0.00%	3.16E-13	0.01%
75354	1,1-Dichloroethene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
71556	1,1,1-Trichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
107028	Acrolein	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
7664417	Ammonia	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
205992	Benzo(b)fluoranthene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
108907	Chlorobenzene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
218019	Chrysene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
110543	Hexane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
67561	Methanol	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
100425	Styrene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
108883	Toluene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
1330207	Xylenes	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%

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Cancer Risk by Source for All Pollutants Combined at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Operations - Flat Terrain AERMOD Run

Sources	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
	receptor #	3162	receptor #	3136	receptor #	6
	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
	434,276	3,731,014	433,238	3,730,039	434,246	3,731,163
	30-Year Cancer Risk	Contribution (%)	30-Year Cancer Risk	Contribution (%)	25-Year Cancer Risk	Contribution (%)
ALL	2.00E-07	100%	9.02E-09	100%	2.65E-09	100%
TOU	2.82E-08	14.12%	1.97E-09	21.82%	9.68E-10	36.47%
ICE	1.71E-07	85.61%	6.98E-09	77.44%	1.68E-09	63.15%
FLARE	5.16E-10	0.26%	6.74E-11	0.75%	9.96E-12	0.38%

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Maximum Chronic Hazard Index by Pollutant at PMI, MEIR, MEIW and Sensitive Receptor
FRB Landfill RNG Facility - Operations - Flat Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3162	receptor #	3136	receptor #	6	receptor #	6
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,276	3,731,014	433,238	3,730,039	434,246	3,731,163	434,246	3,731,163
		Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic 8-hr Hazard Index	Contribution (%)
-	ALL	3.05E-03	100%	1.26E-04	100%	3.14E-04	100%	1.79E-04	100%
107028	Acrolein	2.31E-03	75.53%	9.46E-05	74.96%	2.24E-04	71.54%	1.12E-04	62.52%
50000	Formaldehyde	6.97E-04	22.85%	2.86E-05	22.64%	6.70E-05	21.35%	6.70E-05	37.32%
71432	Benzene	2.17E-04	7.11%	1.05E-05	8.32%	4.89E-05	15.57%	4.89E-05	27.22%
106990	1,3-Butadiene	1.01E-04	3.31%	4.13E-06	3.27%	9.47E-06	3.02%	2.10E-06	1.17%
7664417	Ammonia	3.89E-05	1.28%	2.58E-06	2.04%	2.09E-05	6.66%	0.00E+00	0.00%
106934	Ethylene Dibromide	8.11E-06	0.27%	3.31E-07	0.26%	7.60E-07	0.24%	0.00E+00	0.00%
75070	Acetaldehyde	6.13E-06	0.20%	2.52E-07	0.20%	5.99E-07	0.19%	2.80E-07	0.16%
91203	Naphthalene	3.36E-06	0.11%	1.40E-07	0.11%	3.52E-07	0.11%	0.00E+00	0.00%
108883	Toluene	2.08E-06	0.07%	1.34E-07	0.11%	1.04E-06	0.33%	5.28E-07	0.29%
127184	Tetrachloroethene	1.73E-06	0.06%	1.21E-07	0.10%	1.04E-06	0.33%	0.00E+00	0.00%
1330207	Xylenes	8.68E-07	0.03%	5.81E-08	0.05%	4.76E-07	0.15%	0.00E+00	0.00%
108907	Chlorobenzene	4.95E-07	0.02%	3.45E-08	0.03%	2.96E-07	0.09%	0.00E+00	0.00%
67561	Methanol	2.33E-07	0.01%	9.52E-09	0.01%	2.19E-08	0.01%	0.00E+00	0.00%

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Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3162	receptor #	3136	receptor #	6	receptor #	6
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,276	3,731,014	433,238	3,730,039	434,246	3,731,163	434,246	3,731,163
		Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic 8-hr Hazard Index	Contribution (%)
75092	Methylene Chloride	1.71E-07	0.01%	1.10E-08	0.01%	8.63E-08	0.03%	0.00E+00	0.00%
56235	Carbon Tetrachloride	1.35E-07	0.00%	5.52E-09	0.00%	1.27E-08	0.00%	0.00E+00	0.00%
107062	1,2-Dichloroethane	5.77E-08	0.00%	3.78E-09	0.00%	3.02E-08	0.01%	0.00E+00	0.00%
75354	1,1-Dichloroethene	2.59E-08	0.00%	1.81E-09	0.00%	1.55E-08	0.00%	0.00E+00	0.00%
79016	Trichloroethylene	2.47E-08	0.00%	1.72E-09	0.00%	1.48E-08	0.00%	0.00E+00	0.00%
100414	Ethyl Benzene	1.26E-08	0.00%	8.62E-10	0.00%	5.73E-09	0.00%	0.00E+00	0.00%
67663	Chloroform	1.57E-08	0.00%	6.91E-10	0.00%	2.35E-09	0.00%	0.00E+00	0.00%
100425	Styrene	4.02E-09	0.00%	1.64E-10	0.00%	3.77E-10	0.00%	0.00E+00	0.00%
110543	Hexane	1.41E-09	0.00%	9.89E-11	0.00%	8.45E-10	0.00%	0.00E+00	0.00%
71556	1,1,1-Trichloroethane	1.23E-09	0.00%	8.58E-11	0.00%	7.36E-10	0.00%	0.00E+00	0.00%
75343	1,1-Dichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
79005	1,1,2-Trichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
79345	1,1,2,2-Tetrachloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
205992	Benzo(b)fluoranthene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
218019	Chrysene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
1151	PAH	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
75014	Vinyl Chloride	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%

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Chronic Hazard Index by Source for All Pollutants Combined at PMI, MEIR, MEIW and Sensitive Receptor
FRB Landfill RNG Facility - Operations - Flat Terrain AERMOD Run

Sources	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)		Maximally Exposed Individual Worker (MEIW)	
	receptor #	3162	receptor #	3136	receptor #	6	receptor #	6
	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
	434,276	3,731,014	433,238	3,730,039	434,246	3,731,163	434,246	3,731,163
	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic Hazard Index	Contribution (%)	Chronic 8-hr Hazard Index	Contribution (%)
ALL	3.05E-03	100%	1.26E-04	100%	3.14E-04	100%	1.79E-04	100%
ICE	3.00E-03	98.20%	1.22E-04	96.97%	2.81E-04	89.55%	1.73E-04	96.17%
TOU	5.64E-05	1.85%	3.93E-06	3.12%	3.37E-05	10.76%	3.37E-05	18.81%
FLARE	3.30E-07	0.01%	4.31E-08	0.03%	2.14E-07	0.07%	1.93E-07	0.11%

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Maximum Acute Hazard Index by Pollutant at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Operations - Flat Terrain AERMOD Run

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3208	receptor #	3141	receptor #	3132
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,275	3,731,022	433,275	3,729,974	434,185	3,731,019
		Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)
-	ALL	4.51E-01	100%	1.65E-02	100%	3.57E-01	100%
107028	Acrolein	3.31E-01	73.46%	1.21E-02	73.39%	2.63E-01	73.46%
50000	Formaldehyde	1.17E-01	26.04%	4.28E-03	26.00%	9.31E-02	26.04%
75070	Acetaldehyde	1.87E-03	0.42%	6.84E-05	0.42%	1.49E-03	0.42%
7664417	Ammonia	3.48E-04	0.08%	2.86E-05	0.17%	2.71E-04	0.08%
108883	Toluene	3.78E-05	0.01%	2.43E-06	0.01%	2.96E-05	0.01%
1330207	Xylenes	3.26E-06	0.00%	3.05E-07	0.00%	2.52E-06	0.00%
127184	Tetrachloroethene	5.65E-08	0.00%	2.47E-08	0.00%	3.73E-08	0.00%
100425	Styrene	1.78E-07	0.00%	6.48E-09	0.00%	1.41E-07	0.00%
75014	Vinyl Chloride	1.35E-08	0.00%	8.75E-10	0.00%	1.06E-08	0.00%
106990	1,3-Butadiene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
75354	1,1-Dichloroethene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
75343	1,1-Dichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
107062	1,2-Dichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
71556	1,1,1-Trichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%

Pollutant CAS	Pollutant	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
		receptor #	3208	receptor #	3141	receptor #	3132
		UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
		434,275	3,731,022	433,275	3,729,974	434,185	3,731,019
		Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)
79005	1,1,2-Trichloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
79345	1,1,2,2-Tetrachloroethane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
71432	Benzene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
205992	Benzo(b)fluoranthene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
56235	Carbon Tetrachloride	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
108907	Chlorobenzene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
67663	Chloroform	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
218019	Chrysene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
100414	Ethyl Benzene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
106934	Ethylene Dibromide	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
110543	Hexane	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
75092	Methylene Chloride	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
67561	Methanol	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
91203	Naphthalene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
1151	PAH	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%
79016	Trichloroethylene	0.00E+00	0.00%	0.00E+00	0.00%	0.00E+00	0.00%

Target Organ(s)	Target Organ(s)	Target Organ(s)
EYE	EYE	EYE

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Acute Hazard Index by Source for All Pollutants Combined at PMI, MEIR, and MEIW
FRB Landfill RNG Facility - Operations - Flat Terrain AERMOD Run

Sources	Point of Maximum Impact (PMI)		Maximally Exposed Individual Resident (MEIR)		Maximally Exposed Individual Worker (MEIW)	
	receptor #	3208	receptor #	3141	receptor #	3132
	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)	UTM Easting (m)	UTM Northing (m)
	434,275	3,731,022	433,275	3,729,974	434,185	3,731,019
	Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)	Acute Hazard Index	Contribution (%)
ALL	4.51E-01	100%	1.65E-02	100%	3.57E-01	100%
ICE	4.51E-01	99.98%	1.64E-02	99.74%	3.57E-01	99.98%
TOU	9.48E-05	0.02%	4.15E-05	0.25%	6.27E-05	0.02%
FLARE	1.04E-06	0.00%	9.39E-07	0.01%	6.82E-07	0.00%

Target Organ(s)	Target Organ(s)	Target Organ(s)
EYE	EYE	EYE