

**LANE REGIONAL AIR PROTECTION AGENCY (LRAPA)  
CONSTRUCTION AIR CONTAMINANT DISCHARGE REVIEW REPORT**

**Source Information:**

SIC	4953
NAICS	562212
Public Notice Category	III

Source Category (OAR 340-216-8010: Table 1: Part and Code)	C.8: Landfills with more than 200,000 tons of waste in place and calculated methane generation rate is greater than or equal to 664 metric tons per year which are subject to the requirements of OAR 340 division 239
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**Compliance and Emissions Monitoring Requirements:**

Unassigned emissions	0
Emission credits	NA
Compliance schedule	NA
Source test [date(s)]	See Permit

COMS	NA
CEMS	NA
CPMS	NA
Ambient monitoring	NA

**Reporting Requirements**

Annual report (due date)	March 1
Emission fee report (due date)	March 1
SACC (due date)	July 30
Greenhouse Gas Report (due date)	March 31

Quarterly report (due dates)	NA
Monthly report (due dates)	NA
Excess emissions report	Immediately
Other reports	GHG

**Air Programs**

NSPS (list subparts)	A, Cc, Cf, WWW, IIII
NESHAP (list subparts)	A, AAAA, 40 CFR part 61, subpart M
CAM	NA
Regional Haze (RH)	NA
Synthetic Minor (SM)	NA
Part 68 Risk Management	NA
Title V	Yes
ACDP (SIP)	Construction
Major HAP source	NA

Federal major source	NA
NSR	NA
PSD	NA
Acid Rain	NA
Clean Air Mercury Rule	NA
TACT	NA
>20 Megawatts	NA

**TABLE OF CONTENTS**

PERMITTEE IDENTIFICATION .....5  
FACILITY DESCRIPTION .....5  
PROPOSED EQUIPMENT INSTALLATION UNDER CONSTRUCTION ACDP .....5  
EMISSIONS UNIT AND POLLUTION CONTROL DEVICE IDENTIFICATION .....6  
OPERATING SCENARIO .....6  
EMISSION LIMITS AND STANDARDS .....7  
EMISSION LIMITS FOR INSIGNIFICANT ACTIVITIES .....10  
PLANT SITE EMISSION LIMITS .....11  
UNASSIGNED EMISSIONS AND EMISSION REDUCTION CREDITS .....11  
HAZARDOUS AIR POLLUTANTS .....12  
CLEANER AIR OREGON .....13  
STRATOSPHERIC OZONE DEPLETING REQUIREMENTS .....13  
COMPLIANCE HISTORY .....17  
PUBLIC NOTICE .....17  
EPA REVIEW .....17

**LIST OF ABBREVIATIONS THAT MAY BE USED IN THIS REVIEW REPORT**

ACDP	Air Contaminant Discharge Permit	MACT	Maximum Achievable Control Technology
AIE	Aggregate insignificant emissions	mg/l	Milligram per liters
AQMA	Air Quality Management Area	MM	Million
ASTM	American Society of Testing and Materials	MMcf	Million cubic feet
°C	Celsius	MSW	Municipal Solid Waste Landfill
C-ACDP	Construction Air Contaminant Discharge Permit	NA	Not applicable
CAM	Compliance Assurance Monitoring	NESHAP	National Emission Standards for Hazardous Air Pollutants
CEMS	Continuous Emission Monitoring Systems	NMOC	Non-Methane Organic Compounds
CFR	Code of Federal Regulations	NO <sub>x</sub>	Nitrogen oxides
CH <sub>4</sub>	Methane	NSPS	New Source Performance Standards
CIA	Categorical insignificant activity	O <sub>2</sub>	Oxygen
CI ICE	Compression ignition internal combustion engine	OAR	Oregon Administrative Rules
CO	Carbon monoxide	ORS	Oregon Revised Statutes
CO <sub>2</sub>	Carbon dioxide	O&M	Operation and Maintenance
CO <sub>2</sub> e	Carbon dioxide equivalent	Pb	Lead
CPMS	Continuous Parameter Monitoring System	PCD	Pollution control device
DEQ	Oregon Department of Environmental Quality	PIR	Paved Industrial Roads
dscf	Dry standard cubic foot	PM	Particulate matter
EF	Emission Factors	PM <sub>10</sub>	Particulate matter less than 10 microns in size
EPA	US Environmental Protection Agency	PM <sub>2.5</sub>	Particulate matter less than 2.5 microns in size
EU	Emissions unit	ppm	Parts per million
°F	Fahrenheit	PSEL	Plant Site Emission Limit
FCAA	Federal Clean Air Act	PTE	Potential to Emit
GCCS	Gas collection and control system	RMP	Risk management plans
GHG	Greenhouse gas	scf	Standard cubic foot
gr/dscf	Grains per dry standard cubic foot	scfm	Standard cubic foot per minute
HAP	Hazardous Air Pollutant as defined by LRAPA Title 37 Table 1	SIP	State Implementation Plan
HP	Horsepower	SO <sub>2</sub>	Sulfur dioxide
H <sub>2</sub> S	Hydrogen sulfide	ST	Source test
ID	Identification number	TRS	Total reduced sulfur
I&M	Inspection and Maintenance	UPR	Unpaved Roads
kW	kiloWatt	VE	Visible emissions
lb/MMscf	Pounds per Million standard cubic feet	VHAP	Volatile Hazardous Air Pollutant
LFG	Landfill gas	VMT	Vehicle mile traveled
LRAPA	Lane Regional Air Protection Agency	VOC	Volatile organic compound

**Lane County Public Works – Waste Management Division:  
Short Mountain Landfill**

Title V Operating Permit Expiration Date: September 20, 2017  
Modification Date: Month, **XX, 20XX**

Permit No.: 204740

Review Report

Page 4 of 22

**Modified EPA Method 9 (EPA Method 203B):** As used in this permit “Modified EPA Method 9” (EPA Method 203B) is defined as follows: Opacity must be measured in accordance with EPA Method 9 using the data reduction procedures in EPA Method 203B. For all standards, the minimum observation period must be six (6) minutes, though longer periods may be required by a specific rule or permit condition. Aggregate times (e.g., three (3) minutes in any one (1) hour) consist of the total duration of all readings during the observation period that are equal to or greater than the opacity percentage in the standard, whether or not the readings are consecutive. Each EPA Method 9 readings represents 15 seconds of time. See also the definition of “Opacity” in LRAPA Title 12.

## PERMITTEE IDENTIFICATION

1. Lane County Public Works – Waste Management Division: Short Mountain Landfill (SML or Facility) owns and operates a municipal solid waste (MSW) landfill located at 84777 Dillard Access Road, Eugene, Oregon.

[https://lanecounty.org/government/county\\_departments/public\\_works/waste\\_management/garbage\\_recycling/short\\_mountain\\_landfill](https://lanecounty.org/government/county_departments/public_works/waste_management/garbage_recycling/short_mountain_landfill)

## FACILITY DESCRIPTION

2. Lane County Public Works – Waste Management Division: Short Mountain Landfill is an existing facility. The facility started receiving waste in 1976. The entire site encompasses approximately 580 acres. The projected longevity of the landfill, assuming current projection of future waste volumes, extends to the year 2087. Major activities on the site include receipt and disposal of municipal solid waste such as, household waste, garbage, refuse, commercial solid waste, nonhazardous sludge, and industrial solid waste. SML does not accept hazardous waste but does maintain a separate disposal area for medical sharps and non-friable asbestos. Major activities at the site include receipt and disposal of municipal solid waste and management of the landfill, which includes leachate management, landfill gas management, waste segregation and cover management. The facility does not treat landfill leachate onsite. The collected leachate is hauled via truck to the Glenwood transfer facility where it is discharged to the Eugene-Springfield Water Pollution Control System.

SML has a landfill gas collection and control system (GCCS) installed. The landfill gas contains approximately 50% methane. Theoretically the GCCS collects 75% of the landfill gas by a system of vertical and horizontal wells and by connections to the leachate collection risers. The captured gas is piped to Emerald People's Utility District (EPUD) to combust to create electricity. SML and EPUD have a contractual agreement for the ownership and operation of the GCCS installed at the facility. EPUD holds a Standard Air Contamination Discharge Permit (ACDP) permit number 202536 with LRAPA for the four (4) RICE engines.

## PROPOSED EQUIPMENT INSTALLATION UNDER CONSTRUCTION ACDP

3. SML applied for a Construction ACDP (C-ACDP) to install an enclosed flare as a control device for the landfill gas that is collected by the GCCS and an emergency generator which is considered a categorically insignificant activity. The enclosed flare is owned and operated by SML only. This allows SML to control the landfill gas when EPUD is not in operation due to shutdown or malfunction.

A C-ACDP is required for the proposed installation of an enclosed flare that will result in the addition of applicable requirements in the permit and the addition new criteria pollutants NO<sub>x</sub> and SO<sub>2</sub> from the combustion of the landfill gas. All other pollutants in the current permit will remain the same. SML Plant Site Emission Limits (PSELs) will remain below the Significant Emission Rates (SERs) and therefore, not trigger a Type A State New Source Review (NSR) under LRAPA's title 38.

The installation of the enclosed flare will serve as a control device for the EU: GCCS. The enclosed flare is manufactured by PEI Perennial Energy with a design landfill gas flowrate of 200 to 2,000 scfm, emission limits for NO<sub>x</sub> of 0.06 lb/MMBtu and CO of 0.20 lb/MMBtu, a minimum reduction of NMOC by 98 weight-percent and a minimum of methane by 99 weight-percent that is compliant with 40 CFR part 60, subpart Cf and OAR 340 division 239. The emergency generator is a Caterpillar D125 GC diesel generator set with a maximum electrical output rating of 125 kilowatts.

This C-ACDP does not allow for the operation of the proposed enclosed flare and associated equipment, but the requirements may be rolled into the Title V Operating Permit as an Administrative Amendment as long as the appropriate notice procedures are followed in accordance with the Title V rules. The operation will need to be in compliance with the Title V Operating Permit that is in affect at the time of start-up.

The permittee has requested the external review procedures in OAR 340-218-0210 and 340-218-0230 in addition to the usual public notice procedures, be followed in order for this C-ACDP to be incorporated into the Title V operating permit by an administrative amendment. [LRAPA 37-0052(5)(b)]

This C-ACDP will not address any changes in State or Federal regulations which are applicable to the facility. Nor will it make any changes to any existing Title V Operating Permit conditions at this time. Any required changes in permitted operating conditions will be made when the Title V Operating Permit is renewed.

**EMISSIONS UNIT AND POLLUTION CONTROL DEVICE IDENTIFICATION**

4. The emissions units at this facility are the following:

**Table 1: Emission Units and Pollution Control Devices**

Emission Unit Description	Emission Unit Identification	Pollution Control Device Description
Fugitive Landfill Gas	F-LFG	Gas Collection and Control System (GCCS)
Landfill Gas Collection and Control System (GCCS)	GCCS	<b>Enclosed Flare*</b> ; or 4 IC Engines owed/operated by EPUD (ACDP #202536)
Paved Industrial Roads	PIR	Water Application, Sweeping (if applicable)
Unpaved Roads	UPR	Water Application, Chemical Suppressant (if applicable), and/or Gravel Application
Aggregate Insignificant Emissions • Landfill Cell Activities	AIE	Reasonable precaution to prevent particulate matter from becoming airborne
Categorical Insignificant Activity • <b>Emergency Generator*</b>	CIA	NA

\*New Equipment or new control device

- New Control Device: Enclosed Flare: Make: PEI; Model: FL-120-36-E; Rated Efficiency: 98% NMOC and 99% Methane, LFG Maximum Flow Rate: 2,000 scfm, Minimum Operational Temperature: >760 °C (>1,400 °F).
- New Emergency Generator: Make: Caterpillar; Model: Generator Model: D125 GC and Engine Model: Cat C7.1 In-line 6, 4-cycle diesel; Power Rating: Genset: 125 ekW

**CONSTRUCTION AIR CONTAMINATION DISCHARGE PERMIT NOTE:**

5. Condition numbering sequence is only for this Construction ACDP and does not reflect the numbering in the 2012 Title V Operating Permit. The conditions numbering sequence will be updated during the renewal of the Title V.

**OPERATING SCENARIO**

6. The facility has two operating scenarios. The landfill gas can be combusted with the enclosed flare and/or can be routed to Emerald People’s Utilities District (EPUD) to be utilized in four (4) engines to generate grid power.

**EMISSION LIMITS AND STANDARDS**

**FEDERAL REQUIREMENTS:**

**Note:** For the purpose of this Construction ACDP the applicable federal regulation conditions have been included for only the enclosed flare being constructed. All other applicable federal regulation conditions are located in the current Title V.

7. The applicability to federal requirements is as follows.

7.a. **NSPS:** Title 40 CFR part 60 subpart Cc – *Emissions Guidelines and Compliance Times for Municipal Solid Waste Landfills* (§§60.30c-60.63c) which refers to meeting conditions provided in Title 40 CFR part WWW – *Standards of Performance for Municipal Solid Waste Landfills* (§§60.750-60.759), including the general performance requirements of Title 40 CFR part 60 subpart A. Title 40 CFR part WWW was amended on March 26, 2020 and per of 40 CFR 60.750(d)(1), SML is subject to the requirements to Title 40 CFR part 60 subpart Cf – *Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills* (§§60.30f-60.41f). In accordance with 40 CFR 60.33f(b) of this rule, the permittee must design, install and maintain a landfill gas collection and control system (GCCS), which the facility completed in the 1990’s. In this Construction ACDP the facility is installing an enclosed flare as a control device as required by Title 40 CFR part 60 subpart Cf as part of installing a gas collection and control system. SML landfill gas has been piped to EPUD to create electricity, but the facility is installing an enclosed flare as their control device.

**Table 2: Applicability to 40 CFR part 60, subpart Cf**

[Note: that 40 CFR part 60, subpart Cf is applicable to the entirety of the MSWL, the referenced permit conditions listed are only applicable to the construction of the enclosed flare]

40 CFR part 60, subpart Cf citation	Description	Applicable to source (Y/N)	Comments	Permit Condition
60.30f	Scope and delegated authorities	-	Informational	NA
60.31f	Designated facilities	Y	The MSWL meets the criteria of this subpart.	13.a
60.32f	Compliance times	Y	The MSWL meets the criteria of this subpart.	NA
60.33f	Emission Guidelines for municipal solid waste landfill emissions	Y	Subsection (d) is not applicable to the MSWL GCCS.	10, 12, 13 & 16.a
60.34f	Operational standards for collection and control systems	Y	This section is applicable to the MSWL GCCS, subsections (e) and (f) are applicable to the enclosed flare.	15, 16, & 26
60.35f	Test methods and procedures	Y	This section is applicable to the MSWL GCCS.	13.a, 16.a, 21 & 29.a
60.36f	Compliance provisions	Y	This section is applicable to the MSWL GCCS.	19, 20, & 26
60.37f	Monitoring of operations	Y	Subsection (b) applies to the enclosed flare. Subsection (c), (d) & (g) are not applicable to the MSWL GCCS.	17, 18 26 & 33.a.ii

40 CFR part 60, subpart Cf citation	Description	Applicable to source (Y/N)	Comments	Permit Condition
60.38f	Reporting guidelines	Y	This section is applicable to the MSWL except subsection (i).	13, 21, 23-29 and 38
60.39f	Recordkeeping guidelines	Y	This section is applicable to the MSWL, except Subsections (f) and (j).	23, 25 & 26
60.40f	Specifications for active collection systems	Y	This section is applicable to the MSWL.	NA
60.41f	Definitions	Y	This section is applicable to the MSWL.	NA

- 7.b. NSPS: Title 40 CFR part 60 subpart IIII (§§60.4200-60.4219) – *New Source Performance Standard for Stationary Compression Ignition Internal Combustion Engines*. In accordance with 40 CFR 60.4205(b), SML must meet the emissions standards of this subpart for the CI engine. Per 40 CFR 60.4202(a)(2) the CI engine must meet the emissions standards for Tier 3 nonroad engines specified in 40 CFR part 1039 appendix I in Table 3 and the smoke standards in 40 CFR part 1039.105(b).

Emergency stationary ICE may be operated for maintenance checks and readiness testing for a maximum of 100 hours per calendar year. The federal requirements also allow an emergency stationary ICE to operate for up to 50 hours per year in non-emergency situations, for which the 50 hours are counted as part of the 100 hours per calendar year for maintenance checks and readiness testing. However, the description of an emergency generator in the definition of “Categorically Insignificant Activity” LRAPA Title 12, does not allow an emergency generator to be used in this manner in the state of Oregon. The portions of the rule that conflict with the definition in LRAPA Title 12 have not been included in the draft permit. There is no time limit on the use of emergency stationary ICE in emergency situations.

On May 1, 2015, the D.C. Courts of Appeals vacated the exemption provisions for emergency demand response in 40 CFR 63 Subpart ZZZZ, 40 CFR 60 Subpart IIII, and 40 CFR 60 Subpart JJJJ (*Delaware Dept. of Nat. Resources and Env'tl. Control v. EPA*). The vacated provisions have been removed from the draft permit even though US EPA has not revised the applicable regulations at this time.

- 7.c. NESHAP/MACT: Title 40 CFR part 63 subpart AAAA (§§63.1930-63.1990) – *National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills* includes the general performance requirements of Title 40 CFR part 63 subpart A. In accordance with 40 CFR 63.1959(b)(2) of this rule, the permittee must design, install and maintain a landfill gas collection and control system (GCCS), which was performed under NSPS 40 CFR part 60, Subpart WWW. However, there is one additional requirement that is applicable pursuant to the 40 CFR part 63, Subpart AAAA – the development and retention of a startup, shutdown, and malfunction plan (SSM Plan). The SSM Plan must demonstrate compliance with the operating conditions by parametric monitoring results that are within the specified ranges.



**Table 3: Applicability to 40 CFR part 63, subpart AAAA**

[Note: that 40 CFR part 63, subpart AAAA is applicable to the entirety of the MSWL, the referenced permit conditions listed are only applicable to the construction of the enclosed flare]

40 CFR part 63, subpart AAAA citation	Description	Applicable to source (Y/N)	Comments	Permit Condition
63.1930	Purpose of subpart	-	Informational	NA
63.1935	Subpart applicability	Y	The MSWL meets the criteria of this subpart.	NA
63.1940	Affected source	Y	Subsection (b) is not applicable to the MSWL.	NA
63.1945	Compliance dates	Y	Subsection (a) is not applicable to the MSWL.	NA
63.1947	Compliance dates for operation of bioreactor	N	SML does not operate a bioreactor therefore, this section does not apply.	NA
63.1950	No longer required to comply	Y	This Section applies to the MSWL.	NA
63.1952	No longer required to comply if operating a bioreactor	N	SML does not operate a bioreactor therefore, this section does not apply.	NA
63.1955	Standards: Requirements to meet	Y	Subsection (b) is not applicable to the MSWL GCCS. Subsection (c) applies to the enclosed flare.	14
63.1657	Requirement for GCCS installation and removal	Y	This section is applicable to the MSWL for operation of the GCCS and when the GCCS can be removed.	NA
63.1958	Operational standards for GCCS	Y	This section is applicable to the MSWL and sets operational standards for the GCCS. Subsections (e) and (f) apply to the enclosed flare.	15 & 16
63.1959	NMOC calculations procedures	Y	Subsection (e) is not applicable to the MSWL. Subsections (b), (c), (d) and (f) apply to the enclosed flare.	21 & 22
63.1960	Compliance provisions	Y	This section is applicable to the operation of the MSWL GCCS.	NA
63.1961	Monitoring of operation	Y	Subsections (c), (d), (e), and (g) are not applicable. Subsection (b) applies to the enclosed flare.	17 & 18
63.1962	Specifications for active collection systems	Y	This section is applicable to the MSWL GCCS.	NA
63.1964	How is compliance determined	Y	This section applies to the MSWL GCCS.	NA
63.1965	What is a deviation	Y	Subsections (a) and (b) apply to the enclosed flare.	19

40 CFR part 63, subpart AAAA citation	Description	Applicable to source (Y/N)	Comments	Permit Condition
63.1975	How to calculate the 3-hour block average used to demonstrate compliance	Y	This section is applicable to the enclosed flare.	20
63.1981	What reports must be submitted	Y	This section is applicable to the MSWL GCCS. Subsections (h), (i), (l), (m), and (n) apply to the enclosed flare.	27 – 31
63.1982	What records and reports must be submitted for bioreactors	N	SML does not operate a bioreactor therefore, this section does not apply.	NA
63.1983	What records must be kept	Y	This section is applicable MSWL GCCS. Subsections (a), (b), (c), and (e) apply to the enclosed flare.	23 – 26
63.1985	Who enforces this subpart	Y	This section is applicable to the MSWL GCCS and enclosed flare.	NA
63.1990	What definitions apply	Y	This section is applicable to the MSWL GCCS and enclosed flare	NA

7.d. Compliance Assurance Monitoring (CAM): Title 40 CFR part 64, has been evaluate for the SML’s Landfill Gas Collection and Control System (EU: GCCS) with an enclosed flare as a control device. It was determined that CAM is not applicable to the Landfill Gas Collection and Control System (EU: GCCS). For CAM to be applicable, the emission unit must be applicable to an emission limitation or standard, use a control device to achieve compliance with the limitation or standard and must have pre-control emissions over 100 tons per year of any criterial pollutant. In addition, there are exceptions to the applicability of CAM, such as the applicability of an NSPS or NESHAP that was proposed after November 15, 1990.

The GCCS with the enclosed flare is exempt from the CAM requirements for NMOC since it subject to the NSPS – 40 CFR part 60, subpart Cc and the NESHAP – 40 CFR part 63 subpart AAAA for MSWL both of which were proposed after November 15, 1990. In addition, PM, PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>x</sub>, SO<sub>2</sub>, VOC, and H<sub>2</sub>S uncontrolled emissions are below the 100 ton threshold from the emission unit and are therefore not subject to CAM.

7.e. Accidental Release: The source has certified that the facility is not subject to 40 CFR part 68, which requires a risk management plan for toxic and flammable substances releases.

**EMISSION LIMITS FOR INSIGNIFICANT ACTIVITIES**

8. As identified in earlier in this Review Report, SML is installing an emergency generator as a backup to ignite the enclosed flare. The emergency generator is a Categorical Insignificant Activity (EU: CIA) as define in LRAPA Title 12 and/or OAR 340-200-0020. The standards that apply to CIA are for opacity (20% limit) and particulate matter (0.10 gr/dscf limit). LRAPA does not consider it likely that CIA could exceed an applicable emissions limit or standard because CIA are generally equipment or activities that do not have any emission controls (e.g., emergency generator) and are not expected to exceed the visible emission requirements. The emergency generator is applicable to 40 CFR part 60, subpart IIII and the applicable conditions have been incorporated into the permit.

**PLANT SITE EMISSION LIMITS**

9. Provided below is a summary of the baseline emission rate, netting basis, plant site emission limit and emissions capacity.

**Table 4: Baseline, Netting Basis, Plant Site Emissions Limits and Potential to Emit**

Pollutant	Baseline (tons/yr)	Netting Basis		Plant Site Emission Limit (PSEL)			PTE (tons/yr)
		Previous (tons/yr)	Proposed (tons/yr)	Previous PSEL (tons/yr)	Proposed PSEL (tons/yr)	PSEL Increase (tons/yr)	
PM	9.9	10	10	24	24	0	22.06
PM <sub>10</sub>	2.1	2	2	14	14	0	10.16
PM <sub>2.5</sub>	NA	0.29	0.3	9	9	0	6.04
CO	0.02	0	0	99	99	0	49.95
NO <sub>x</sub>	0	0	0	0	39	39	16.01
SO <sub>2</sub>	0	0	0	0	39	39	8.77
VOC	0	0	0	39	39	0	11.08
H <sub>2</sub> S	0	0	0	9	9	0	0.66
NMOC	0.01	0.01	0.1	49	49	0	28.02
GHG	139,398	139,398	139,398	213,398	293,678	80,280	293,678

10. The baseline emissions rates for PM, PM<sub>10</sub>, CO and NMOC were determined in previous permitting actions and there are no changes. A baseline emission rate is not required for PM<sub>2.5</sub> in accordance with the “baseline emission rate” in LRAPA subsection 42-0048(3).
11. There is no change to the netting basis for the pollutants with newly established PSELs (NO<sub>x</sub> and SO<sub>2</sub>). Increases to the netting basis is approved through Major NSR, Type A State NSR, or PSD action under LRAPA title 38. The pollutants with newly established PSELs are below the SER and therefore, the action did not trigger a Major NSR or Type A State NSR action, so the netting basis for each of these pollutants remains zero (0). [LRAPA 42-0046(3)(e)]
12. PSEL for NO<sub>x</sub> and SO<sub>2</sub> were installed into the table for the proposed combustion emission for the enclosed flare, all other emissions will remain at the current permit limits.
13. The greenhouse gases (GHGs) baseline period was based on 2010 GHGs emissions for the facility. The baseline and netting GHGs in 2012 was 139,398 tons per year. The 2012 GHGs annual emission is the baseline plus the generic PSEL of 74,000 tons of CO<sub>2</sub>e per year (139,398 + 74,000 = 213,398 tons per year) was used in the 2012 Title V permit. The proposed annual emissions in this permit are based on the total fugitive GHGs emissions without any controls, though 75% of the landfill gas is collected and controlled. The new total GHGs annual emissions 293,678 tons per year.

**UNASSIGNED EMISSIONS AND EMISSION REDUCTION CREDITS**

14. The facility has no unassigned emissions. The facility does not have any emission reduction credits at this time.

**SIGNIFICANT EMISSION RATE**

15. For all regulated pollutants, other than GHGs, the Plant Site Emission Limit (PSEL) increase over the baseline emissions is less than the Significant Emission Rate (SER) as defined in LRAPA title 12. Per LRAPA 38-0010(2)(c), GHGs are not subject to State NSR and therefore require no farther analysis.

**Table 6: Significant Emission Rate**

Pollutant	Baseline Emissions (tons/year)	Proposed PSEL (tons/year)	Unassigned Emissions (tons/year)	SER (tons/year)
PM	9.9	24	---	25
PM <sub>10</sub>	2.1	14	---	15
PM <sub>2.5</sub>	0.29	9	---	10
CO	0.02	99	---	100
NO <sub>x</sub>	0	39	---	40
SO <sub>2</sub>	0	39	---	40
VOC	0	39	---	40
H <sub>2</sub> S	0	9	---	10
NMOC	0.1	49	---	50
GHG	139,398	293,678	---	75,000

16. There have been no physical modifications at the facility that would have required a New Source Review or have met the LRAPA definition of a major modification since the baseline period.

**HAZARDOUS AIR POLLUTANTS**

17. The following is the potential to emit (tons per year) of the facility for hazardous air pollutants listed in Section 112(b) of the 1990 Clean Air Act Amendments (CAAA). The emissions totals below reflect the maximum HAP emissions from the facility. The table demonstrates that the facility emits less than ten (10) tons per year of any single HAP and less than 25 tons per year of total HAPs. SML is considered an area source of HAP and is subject to 40 CFR part 63 subpart AAAA.

**Table 7: Hazardous Air Pollutants**

Hazardous Air Pollutants	Potential Emissions (tons/yr)
1,1-Dichloroethane (ethylidene dichloride)	0.07
1,1-Dichloroethane (vinylidene chloride)	0.01
1,1,1-Trichloroethane (methyl chloroform)	0.02
1,1,2,2-Tetrachloroethane	0.06
1,2-Dichloroethane (ethylene dichloride)	0.01
1,2-Dichloropropane (propylene dichloride)	0.01
Acrylonitrile	0.10
Carbon disulfide	0.01
Carbon tetrachloride	0.0002
Carbonyl sulfide	0.01
Chlorobenzene	0.01
Chloroethane (ethyl chloride)	0.03
Chloroform	0.0011
Dichloromethane (methylene chloride)	0.38
Ethylbenzene	0.15
Hexane	0.18
Mercury	0.00002

Hazardous Air Pollutants	Potential Emissions (tons/yr)
Methyl ethyl ketone	0.16
Methyl isobutyl ketone	0.06
Perchloroethylene (tetrachloroethylene)	0.19
Trichloroethylene (trichloroethene)	0.12
Vinyl chloride	0.14
Xylenes	0.40
<b>Totals</b>	<b>2.12</b>

### CLEANER AIR OREGON

18. Under the Cleaner Air Oregon program, only existing sources that have been notified by LRAPA and new sources are required to perform risk assessments. This source has not been notified by LRAPA and is therefore, not yet required to perform a risk assessment or report annual emissions of toxic air contaminants. LRAPA required reporting of approximately 600 toxic air contaminants in 2016 and regulates approximately 260 toxic air contaminants that have Risk Based Concentrations established in rule. All Federal HAPs (FHAPs) are on the list of approximately 600 toxic air contaminants. The FHAPs and toxic air contaminants listed below are based upon source testing and standard emission factors for the types of emission units at this facility. After the source is notified by LRAPA, they must update their inventory and perform a risk assessment to see if they must reduce risk from their toxic air contaminant emissions. Until then, sources will be required to report toxic air contaminant emissions triennially

### STRATOSPHERIC OZONE DEPLETING REQUIREMENTS

19. The facility does not manufacture, sell, distribute, or use in the manufacturing of a product any stratospheric ozone-depleting substances and the EPA 1990 Clean Air Act, as amended. Sections 601-618 of the act do to apply to the facility except that air conditioning units and fire extinguishers containing Class I or Class II substances must be serviced by certified repairmen to ensure that the substances are recycled or destroyed appropriately.

### MONITORING REQUIREMENTS

20. Section 70.6(a)(3) of the federal Title V permit rules, requires all monitoring and analysis procedures or test methods required under applicable requirements be contained in Title V permits. In addition, where the applicable requirement does not require periodic testing or monitoring, periodic monitoring must be prescribed that is sufficient to yield reliable data from the relevant time period that is representative of the source's compliance with the permit.

However, the requirements to include in a permit testing, monitoring, recordkeeping, reporting, and compliance certification sufficient to assure compliance does not require the permit to impose the same level of rigor with respect to all emissions units and applicable requirement situations. It does not require extensive testing or monitoring to assure compliance with the applicable requirements for emissions units that do not have significant potential to violate emission limitations or other requirements under normal operating conditions. Where compliance with the underlying applicable requirement for an insignificant emission unit is not threatened by a lack of a regular program of monitoring and where periodic testing or monitoring is not otherwise required by the applicable requirement, then in this instance, the status quo (i.e., no monitoring) will meet section 70.6(a)(3). For this reason, this permit does not include any monitoring for insignificant emissions units and activities.

The Title V permit does include monitoring for all requirements that apply to significant emissions units in addition to the testing requirements in the permit. Periodic visible emissions observations are required for all particulate emissions sources. It is assumed that as long as these processes and controls are properly operated,

the particulate emissions levels will be below the emissions limits specified in the permit. In addition, the permit includes monitoring of operating parameters for other emission units and pollution control devices.

Emission unit GCCS with new control device (enclosed flare) specific monitoring:

21. The monitoring below is specific to enclosed flare as a control device for the emission unit: GCCS.

Based on Federal Regulations:

- The collection and control system contributing to venting of the gas to the atmosphere must be closed within one (1) hour that the GCCS is not operating.
- The enclosed flare must reduce NMOC by 98% by weight or reduce the outlet NMOC concentration to less than 20 ppmv, dry basis as hexane at 3% oxygen.
- A temperature monitoring device for the enclosed flare will be equipped with a continuous recorder and having a minimum accuracy of  $\pm 1$  percent of the temperature being measured expressed in degrees Celsius or  $\pm 0.5$  degrees Celsius.
- A gas flow rate measuring device must record the flow to the enclosed flare at least every 15 minutes or the bypass line valve must be secured in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.
- The enclosed flare must be monitored for system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments, startup, shutdowns, and malfunction.
- For the enclosed flare all associated equipment must be installed, calibrated, maintained, and operated according to the manufacturer's specifications or last performance test parameter data.
- The enclosed flare average operating temperature in any 3-hour periods of operation must not go below 28° C (82° F) of the minimum inlet temperature of 760°C (1,400°F) per manufacturer's specification or performance testing inlet temperature per test results.
- A written Operation and Maintenance Plan (O&M Plan) must be maintained for the enclosed flare used for the EU: GCCS. The O&M Plan must be reviewed annually by the permittee and revised as necessary based on the operation of the enclosed flare.

Based on DEQ Regulation OAR 340 division 239:

- Install, calibrate, maintain and operation the enclosed flare per manufacturer's specifications.
- A temperature monitoring device for the enclosed flare will be equipped with a continuous recorder and having a minimum accuracy of  $\pm 1$  percent of the temperature being measured expressed in degrees Celsius and Fahrenheit.
- A gas flow rate measuring device must record the flow to the enclosed flare at least every 15 minutes or the bypass line valve must be secured in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism must be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.
- All monitoring requirements apply except for periods of monitoring system malfunction, repairs associated with monitoring system malfunction, and required monitoring system quality assurance or quality control activities. If the malfunction is caused by maintenance or careless operation are not considered malfunction.

Based on LRAPA Regulation:

- Quarterly visual survey of the enclosed flare using EPA Method 22. If identifiable visible emissions, the permittee must take corrective action to eliminate the visible emission or conduct an EPA Method 203B test within 24 hours or both.
- A written Operation and Maintenance Plan (O&M Plan) must be maintained for the enclosed flare used for the EU: GCCS. The O&M Plan must be reviewed annually by the permittee and revised as necessary based on the operation of the enclosed flare

PSEL Monitoring:

22. The LFG will be controlled by the enclosed flare when LFG is not being utilized by EPUD. Employing the enclosed flare has increased the hourly emissions for PM, PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, CO, SO<sub>2</sub>, VOC, H<sub>2</sub>S, and NMOC. The enclosed flare will increase the annual PSELs for only NO<sub>x</sub> and SO<sub>2</sub> to the generic levels. All other pollutant PSELs are limited to the generic levels and the addition of the enclosed flare's emissions did not increase the PTEs of the other pollutants of over the generic limits.

**TESTING REQUIREMENTS**

23. 40 CFR part 60, subpart Cf and 40 CFR part 63, subpart AAAA – NMOC Reduction:

- SML is required to perform an initial source test on the enclosed flare no later than 180 days after the initial startup to demonstrate compliance with the 98% NMOC reduction in the LFG.
- The enclosed flare must be operating within the parameter ranges per the manufacturers or engineering specification for the initial performance test.
- EPA Method 25 or 25C (Method 25C may be used at the inlet only) of 40 CFR 60 appendix A to determine compliance with the 98 weight-percent efficiency or the 20 parts per million by volume outlet NMOC concentration level. EPA Method 3, 3A, or 3C must be used to determine oxygen for correcting the NMOC concentration as hexane to 3 percent. In cases where the outlet concentration is less than 50 ppm NMOC as carbon (8 ppm NMOC as hexane), Method 25A should be used in place of Method 25. Method 18 may be used in conjunction with Method 25A on a limited basis (compound specific, *e.g.*, methane) or Method 3C may be used to determine methane. The methane as carbon should be subtracted from the Method 25A total hydrocarbon value as carbon to give NMOC concentration as carbon. The permittee must divide the NMOC concentration as carbon by 6 to convert the C<sub>NMOC</sub> as carbon to C<sub>NMOC</sub> as hexane.
- The average temperature measured at least every 15 minutes and average over the same time period of the performance test.

24. State Regulation OAR chapter 340, division 239 – Methane Reduction:

- SML is required to perform an initial source test on the enclosed flare no later than 180 days after the initial startup to demonstrate compliance with the 99% Methane reduction in the LFG.
- Following an initial performance test, the permittee must conduct a complete annual performance test each calendar year, no later than 45 days after the anniversary date of the initial performance test.
- If a gas enclosed flare remains in compliance after three (3) consecutive performance tests, the permittee may conduct performance tests once every three (3) years, but no later than 45 days after each third anniversary date of the initial performance test. If a subsequent performance test shows the gas collection and control system does not demonstrate compliance the performance testing frequency must return to annual.
- The enclosed flare (combustor) must use one of the following test methods, to determine the efficiency of the control device in reducing methane by at least 99 percent:
  - EPA Reference Method 18;

- EPA Reference Method 25 and EPA Reference Method 25A; or
- EPA Reference Method 25C.

25. LRAPA Regulations – Testing Requirements:

- SML is required to perform an initial source test on the enclosed flare no later than 180 days after the initial startup to demonstrate compliance with the 98% NMOC reduction, 99% Methane destruction, emission verification for PM, NO<sub>x</sub>, CO, and VOC, and the LFG gas heat value.

**Table 8: Test Methods**

Measured Pollutant	Method	Standard
PM	EPA or DEQ Method 5	Emission Factor Verification
NO <sub>x</sub>	EPA Method 7E	Emission Factor Verification
CO	EPA Method 10	Emission Factor Verification
VOC	EPA Method 18 or 25	Emission Factor Verification
Total Reduced Sulfur	EPA Method 16, 16A, or 16C	Emission Factor Verification
NMOC	EPA Method 18 with 25A, 25 or 25C	98% Reduction Efficiency
Methane Outlet Concentration	EPA Method 25 or 25C	99% Destruction Efficiency
LFG gas heat value	EPA Method 2E and Method 25 or 25C	Gas heat value verification
Opacity	EPA Method 203B	≤ 20 percent

- Source test plan must be submitted to LRAPA at least 60 days prior to the performance test and be approved by LRAPA Source Test Coordinator. The performance test results must be submitted to LRAPA within 60 days of the performance test.
- Only regular operating staff may adjust the processes or the enclosed flare parameters during the performance test and only within 2 hours prior to the test.
- Must have at least 3 test runs reported as the arithmetic average of all valid test runs.
- If an extension is needed it must be approved by LRAPA.
- If any of the performance test is declared invalid by LRAPA the facility has 30 calendar days to submit a new source test plan to retest.

**RECORDKEEPING REQUIREMENTS**

26. The permit includes requirements for maintaining records of all testing, monitoring, and production information necessary for assuring compliance with the standards and calculating plant site emissions. The records of all monitoring specified in the Title V permit must be kept at the plant site for at least 5 years.

**REPORTING REQUIREMENTS**

27. The permit includes a requirement for submitting semi-annual and annual monitoring reports that include semi-annual compliance certifications. Excess emissions are required to be reported to LRAPA immediately as well as in a logbook attached to the annual report. Emissions fees reports are required annually.



## **GENERAL BACKGROUND INFORMATION**

28. The facility is located in an area that has been designated as attainment all criteria pollutants.
29. The facility is located within 100 kilometers of two (2) Class-I air quality protection areas: Diamond Peak Wilderness, and Three Sisters Wilderness.

## **COMPLIANCE HISTORY**

30. October 18, 2021: Stipulated Final Order (SFO), SFO #21-3830 was issued to SML for failure to cover active asbestos-containing waste materials (ACWM) disposal area at the end of each day that new ACWM is disposed of with a tarp that is identical to or equivalent of, materials used to cover active areas on the general landfill.

## **PUBLIC NOTICE**

31. This permit will be on public notice from April 27, 2022 to May 31, 2022. Comments may be submitted during the comment period. LRAPA will hold a public hearing if requested by 10 or more individuals or one person representing a group of 10 or more individuals. After the comment period and hearing, if requested, LRAPA will review the comments and modify the permit as may be appropriate. A proposed permit will then be sent to EPA for a 45-day review period. LRAPA may request and EPA may agree to an expedited review of 5 days if there are no substantive or adverse comments during the comment period.

If EPA does not object in writing, any person may petition the EPA within 60 days after the expiration of the EPA's 45-day review period to make such objection. Any such petition must be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided for in OAR 340-218-0210, unless the petitioner demonstrates that it was impracticable to raise such objections within such period, or unless the grounds for such objection arose after such period.

## **EPA REVIEW**

32. **Update after EPA's Review**

BAE/cmw  
4/21/2022

**DETAIL SHEETS:**

ENCLOSED FLARE: POTENTIAL EMISSIONS BASED ON MAXIMUM HOURS OF OPERATION		
Pollutant	lb/hour	ton/year
PM, PM <sub>10</sub> , & PM <sub>2.5</sub>	1.02	4.47
NO <sub>x</sub>	3.64	15.94
CO	10.92	47.83
SO <sub>2</sub>	2.00	8.74
VOC	0.13	0.56
HAP	0.04	0.19
H <sub>2</sub> S	0.01	0.03
TRS	0.01	0.03
NMOC	0.32	1.40
PM, PM <sub>10</sub> , & PM <sub>2.5</sub> : This EF comes from EPA AP-42 Table 2.4-5 Emission Factors for Flares (enclosed flares)		
NO <sub>x</sub> : Emission Factor for NO <sub>x</sub> of 0.06 lb/MMBtu is based on the <i>PEI Manufacturer's Guaranteed Performance Specifications Sheet</i> submitted to LRAPA as part of the Application. Equation 5 was used to calculate emissions (lb/hr = MMBtu/hr x EF) where MMBtu/hr was based on inlet High Heat Value (HHV) for the flare.		
CO: Emission Factor for CO of 0.20 lb/MMBtu is based on the PEI Manufacturer's Guaranteed Performance Specifications Sheet submitted to LRAPA as part of the Application. Equation 5 was used to calculate emissions (lb/hr = MMBtu/hr x EF) where MMBtu/hr was based on inlet Low Heat Value (LHV) for the flare.		
SO <sub>2</sub> : Using SO <sub>2</sub> molecular weight of 64.066 lb/lbmol divided by the conversion factor of 385.1 x 10 <sup>6</sup> ppmv to lb/ft <sup>3</sup> then multiplying by the inlet concentration of H <sub>2</sub> S (0.01 x 10000 = ppm), assuming all H <sub>2</sub> S converts into SO <sub>2</sub> , without a destruction efficiency to get 1.66E-05 lb/ft <sup>3</sup> and multiplying by 10 <sup>6</sup> to get 16.64 lb/MMcf		
VOC: Utilizing EPA AP-42 Chapter 2.4 Table 2.4-1, for each individual VOC in the table, the molecular weight (lb/lbmol) multiplied by the Default Concentration in ppmv divided by 385.1 x 10 <sup>6</sup> lbmol/ppmv*ft <sup>3</sup> (the conversion factor from ppmv to lb/ft <sup>3</sup> ) to provide the lb/scf for each individual VOC. The VOC total is 1.07E-04 lb/scf. The flare will control the VOC emissions by 99%. Building the control factor of the enclosed flare of 99%, 1.07E-04 lb/scf is multiplied by 0.01 (1-(99/100)) to the controlled EF of 1.07E-06 lb/scf. To convert from lb/scf to lb/MMscf, multiple by 10 <sup>6</sup> to the controlled EF in lb/MMscf of 1.07 lb/MMscf.		
HAP: Utilizing EPA AP-42 Chapter 2.4 Table 2.4-1, for each individual HAP in the table, the molecular weight (lb/lbmol) multiplied by the Default Concentration in ppmv divided by 385.1 x 10 <sup>6</sup> lbmol/ppmv*ft <sup>3</sup> (the conversion factor from ppmv to lb/ft <sup>3</sup> ) to provide the lb/scf for each individual HAP. The HAPs total is 1.76E-05 lb/scf. The flare will control the HAPs emissions by 98%. Building the control factor of the enclosed flare of 98%, 1.76E-05 lb/scf is multiplied by 0.02 (1-(98/100)) to the controlled EF of 3.52E-07. To convert from lb/scf to lb/MMscf, multiple by 10 <sup>6</sup> to the controlled EF in lb/MMscf of 3.52E-01 lb/MMscf.		
H <sub>2</sub> S and TRS: 2012 Title V H <sub>2</sub> S Emission Factor of 3.14 lb/MMscf was used as the basis and the control factor of 98% was built into the EF. The 2012 TV permit did not separate the H <sub>2</sub> S and TRS. In this Construction ACDP the TRS was separate as it's own pollutant, but utilized the H <sub>2</sub> S EF as conservative.		
NMOC: 2012 Title V NMOC Emission Factor of 133.1 lb/MMscf was used as the basis and the control factor of 98% was built into the EF		

ENCLOSED FLARE: POTENTIAL TO EMIT BASED ON 2000 HOURS OF OPERATION		
Pollutant	lb/hour	ton/year
PM	1.02	1.02
PM <sub>10</sub>	1.02	3.64
PM <sub>2.5</sub>	1.02	10.92
NO <sub>x</sub>	3.64	2.00
CO	10.92	0.13
SO <sub>2</sub>	2.00	0.04
VOC	0.13	0.01
HAP	0.04	0.01
H2S/TRS	0.01	0.32
NMOC <sup>(2)</sup>	0.32	0.00

Plant Site Emissions											
Emission Units	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	CO	SO <sub>2</sub>	VOC	H <sub>2</sub> S	NMOC	CH <sub>4</sub>	GHG
Fugitive Landfill Gas (F-LFG) (Uncontrolled)	0.00	0.00	0.00	0.00	2.05	0.00	10.51	0.63	26.62	8,130	293,678
Landfill GCCS with Enclosed Flare (GCCS)	4.47	4.47	4.47	15.94	47.83	8.74	0.56	0.03	1.40	0.28	55,220
Paved Industrial Roads (PIR)	3.73	0.75	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unpaved Paved Road (UPR)	12.86	3.94	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Subtotals</b>	<b>21.06</b>	<b>9.16</b>	<b>5.04</b>	<b>15.94</b>	<b>49.88</b>	<b>8.74</b>	<b>11.07</b>	<b>0.66</b>	<b>28.02</b>	<b>8,130</b>	<b>293,678</b>
Aggregate Insignificant Emissions (AIE)	< 1	< 1	< 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26
Emergency Generator (CIA)	0.00	0.00	0.00	0.06	0.07	0.02	0.00	0.00	0.00	0.00	0.00
<b>Subtotal</b>	<b>&lt; 1</b>	<b>&lt; 1</b>	<b>&lt; 1</b>	<b>0.06</b>	<b>0.07</b>	<b>0.02</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>26.00</b>
<b>Potential to Emit (PTE)</b>	<b>22.06</b>	<b>10.16</b>	<b>6.04</b>	<b>16.01</b>	<b>49.95</b>	<b>8.77</b>	<b>11.08</b>	<b>0.66</b>	<b>28.02</b>	<b>8,130.3</b>	<b>293,678</b>
<b>PSELS</b>	<b>24</b>	<b>14</b>	<b>9</b>	<b>39</b>	<b>99</b>	<b>39</b>	<b>39</b>	<b>9</b>	<b>49</b>	<b>8,130</b>	<b>293,678</b>

<b>AP-42 Default Gas Constituent Concentrations in Landfills</b>					
<i>AP-42 Section 2.4 Municipal Solid Waste Landfills, Table 2.4-1: Default Concentrations for LFG Constituents. Note:</i>					
Compound	Molecular Weight (g/mol)	Default Concentration (ppmv)		lb/hour uncontrolled emissions (Equation 4)	lb/scf uncontrolled emissions
1,1 - Dichloroethane (ethylidene dichloride)	98.97	2.35	HAP	0.07247	6.04E-07
1,1 - Dichloroethane (vinylidene chloride)	96.94	0.2	HAP VOC	0.00604	5.03E-08
1,1,1 - Trichloroethane (methyl chloroform)	133.41	0.48	HAP VOC	0.01995	1.66E-07
1,1,2,2 - Tetrachloroethane	167.85	1.11	HAP VOC	0.05806	4.84E-07
1,2 - Dichloroethane (ethylene dichloride)	98.96	0.41	HAP VOC TAP	0.01264	1.05E-07
1,2 - Dichloropropane (propylene dichloride)	112.99	0.18	HAP VOC	0.00634	5.28E-08
2-Propanol (isopropyl alcohol)	60.11	50.1	VOC	0.93841	7.82E-06
Acetone	58.08	7.01	VOC	0.12687	1.06E-06
Acrylonitrile	53.06	6.33	HAP VOC TAP	0.10466	8.72E-07
Bromodichloromethane	163.83	3.13	VOC	0.15979	1.33E-06
Butane	58.12	5.03		0.09110	7.59E-07
Carbon disulfide	76.13	0.58	HAP TAP	0.01376	1.15E-07
Carbon tetrachloride	153.84	0.004	HAP VOC TAP	0.00019	1.60E-09
Carbonyl sulfide	60.07	0.49	HAP VOC	0.00917	7.64E-08
Chlorobenzene	112.56	0.25	HAP VOC TAP	0.00877	7.31E-08
Chlorodifluoromethane	86.47	1.3		0.03503	2.92E-07
Chloroethane (ethyl chloride)	64.52	1.25	HAP VOC	0.02513	2.09E-07
Chloroform	119.39	0.03	HAP VOC TAP	0.00112	9.30E-09
Chloromethane	50.49	1.21	VOC	0.01904	1.59E-07
Dichlorobenzene	147	0.21		0.00962	8.02E-08
Dichlorodifluoromethane	120.91	15.7	VOC TAP	0.59152	4.93E-06
Dichlorofluoromethane	102.92	2.62	VOC TAP	0.08403	7.00E-07
Dichloromethane (methylene chloride)	84.94	14.3	HAP VOC TAP	0.37849	3.15E-06
Dimethyl sulfide (methyl sulfide)	62.13	7.82		0.15140	1.26E-06
Ethane	30.07	889	VOC	8.32996	6.94E-05
Ethanol	46.08	27.2	VOC	0.39056	3.25E-06
Ethyl mercaptan (ethanethiol)	62.13	2.28		0.04414	3.68E-07
Ethylbenzene	106.16	4.61	HAP VOC	0.15250	1.27E-06
Ethylene dibromide	187.88	0.001		0.00006	4.88E-10
Fluorotrichloromethane	137.38	0.76	VOC	0.03253	2.71E-07
Hexane	86.18	6.57	HAP VOC	0.17643	1.47E-06
Mercury	200.61	0.000292	HAP	0.00002	1.52E-10
Methyl ethyl ketone	72.11	7.09	HAP VOC TAP	0.15931	1.33E-06
Methyl isobutyl ketone	100.16	1.87	HAP VOC TAP	0.05836	4.86E-07
Methyl mercaptan	48.11	2.49		0.03733	3.11E-07
Pentane	72.15	3.29	VOC	0.07397	6.16E-07
Perchloroethylene (tetrachloroethylene)	165.83	3.73	HAP TAP	0.19274	1.61E-06
Propane	44.09	11.1	VOC	0.15250	1.27E-06
t-1,2-dichloroethene	96.94	2.84	VOC	0.08579	7.15E-07
Trichloroethylene (trichloroethene)	131.4	2.82	HAP VOC	0.11547	9.62E-07
Vinyl chloride	62.5	7.34	HAP VOC TAP	0.14295	1.19E-06
Xylenes	106.16	12.1	HAP VOC TAP	0.40027	3.34E-06
H2S	34.08	35.5		0.37700	3.14E-06

Pollutant	Emission Factor (EF)	EF Unit	Basis for EFs
PM, PM <sub>10</sub> , PM <sub>2.5</sub>	17	lb/MMscf CH <sub>4</sub>	EF comes from EPA AP-42 Table 2.4-5 Emission Factors for a Flare
NO <sub>x</sub>	0.06	lb/MMBtu	Manufacturer's emission factor for the enclosed flare
CO	0.2	lb/MMBtu	Manufacturer's emission factor for the enclosed flare
SO <sub>2</sub>	16.64	lb/MMscf LFG	Using SO <sub>2</sub> molecular weight of 64.066 lb/lbmol divided by the conversion factor of 385.1 x 10 <sup>6</sup> ppmv to lb/ft <sup>3</sup> then multiplying by the inlet concentration of H <sub>2</sub> S (0.01 x 10000 = ppm), assuming all H <sub>2</sub> S converts into SO <sub>2</sub> without a destruction efficiency to get 1.66E-05 lb/ft <sup>3</sup> and multiplying by 10 <sup>6</sup> to get 16.64 lb/MMcf
VOC	1.07	lb/MMscf LFG	Utilizing EPA AP-42 Chapter 2.4 Table 2.4-1, for each individual VOC in the table, the molecular weight (lb/lbmol) multiplied by the Default Concentration in ppmv divided by 385.1 x 10 <sup>6</sup> lbmol/ppmv*ft <sup>3</sup> (the conversion factor from ppmv to lb/ft <sup>3</sup> ) to provide the lb/scf for each individual VOC. The VOC total is 1.07E-04 lb/scf. The flare will control the VOC emissions by 99%. Building the control factor of the enclosed flare of 99%, 1.07E-04 lb/scf is multiplied by 0.01 (1-(99/100)) to the controlled EF of 1.07E-06 lb/scf. To convert from lb/scf to lb/MMscf, multiple by 10 <sup>6</sup> to the controlled EF in lb/MMscf of 1.07 lb/MMscf.
HAPs	3.52E-01	lb/MMscf LFG	Utilizing EPA AP-42 Chapter 2.4 Table 2.4-1, for each individual HAP in the table, the molecular weight (lb/lbmol) multiplied by the Default Concentration in ppmv divided by 385.1 x 10 <sup>6</sup> lbmol/ppmv*ft <sup>3</sup> (the conversion factor from ppmv to lb/ft <sup>3</sup> ) to provide the lb/scf for each individual HAP. The HAPs total is 1.76E-05 lb/scf. The flare will control the HAPs emissions by 98%. Building the control factor of the enclosed flare of 98%, 1.76E-05 lb/scf is multiplied by 0.02 (1-(98/100)) to the controlled EF of 3.52E-07. To convert from lb/scf to lb/MMscf, multiple by 10 <sup>6</sup> to the controlled EF in lb/MMscf of 3.52E-01 lb/MMscf.
H <sub>2</sub> S	6.20E-02	lb/MMscf LFG	Building in the destruction factor of 98% of H <sub>2</sub> S by the enclosed flare in the EF. Multiplying 0.02 (1-(98/100)) to the 3.1 lb/MMscf EF from the current permit the enclosed flare.
Total Reduced Sulfur (TRS)	6.20E-02	lb/MMscf LFG	Building in the destruction factor of 98% of H <sub>2</sub> S into the TRS for the enclosed flare in the EF. Multiplying 0.02 (1-0.98) to the 3.1 lb/MMscf EF from the current permit the enclosed flare. This is a conservative calculation because TRS is only a fraction of
NMOC	2.66	lb/MMscf LFG	Using the EF from the 2012 Title V permit of 133.1 lb/MMscf and adjusting the 2012 EF to include reduction efficiency of 98% or 0.02 (1-(98/100)) to yield 2.66 lb/MMscf the EF for the enclosed flare

<b>Emergency Generator (IEU): Caterpillar D125, 480V Standby Diesel Genset</b>					
Pollutant	Max Design Capacity (BHP)	Emission Factors		Hourly Emission Rate (lbs/hr)	Emissions for 100 hours/yr (tons/yr)
		Factors	Units		
PM <sup>(1)</sup>	229.00	3.31E-04	lb/hp-hr	0.076	0.004
PM <sub>10</sub> <sup>(1)</sup>	229.00	3.31E-04	lb/hp-hr	0.076	0.004
PM <sub>2.5</sub> <sup>(1)</sup>	229.00	3.31E-04	lb/hp-hr	0.076	0.004
NO <sub>x</sub> <sup>(2)</sup>	229.00	5.58E-03	lb/hp-hr	1.277	0.064
CO <sup>(1)</sup>	229.00	5.73E-03	lb/hp-hr	1.313	0.066
SO <sub>2</sub> <sup>(3)</sup>	229.00	2.05E-03	lb/hp-hr	0.469	0.023
VOC <sup>(2)</sup>	229.00	3.09E-04	lb/hp-hr	0.071	0.004

1. EPA Tier 3 limit used as conservative emission factor in lieu of manufacturer's test data emission factors for PM and CO.
2. Used Caterpillar manufacturer's testing data
3. EPA AP-42, Chapter 3.3, Table 3.3-1 for diesel fuel industrial engines

<b>GREENHOUSE GAS EMISSIONS AT 8,760 HOURS PER YEAR</b>			
	CO <sub>2</sub> e		
	Pounds/year	lb/hour	TPY
Passthrough CO <sub>2</sub>	49,254,629.8	5,622.7	24,627.3
Combustion CO <sub>2</sub>	60,871,887.8	6,948.8	30,435.9
CH <sub>4</sub> Emissions	93,523.2	10.7	46.8
N <sub>2</sub> O Emissions	219,475.5	25.1	109.7
<b>Total CO<sub>2</sub>e</b>	<b>110,439,516.2</b>	<b>12,607.3</b>	<b>55,219.8</b>

**Conversions of NG from MMBtu to MMscf.**

1MMscf = 1026 MMBtu

1MMbtu = 974.66 scf or 9.7466E-4 MMscf

So: (MMbtu) / (1,026) = MMscf (MMbtu) \* (9.7466E-4) = MMscf