

State of Vermont
Agency of Natural Resources
Department of Environmental Conservation



Air Quality & Climate Division
Montpelier, Vermont

AIR POLLUTION CONTROL PERMIT
TO CONSTRUCT

Date **Draft** Permit Issued: July 17, 2026

Facility: Coventry Municipal Solid Waste Facility
consisting of Coventry Landfill (Landfill
Operation) and Landfill Gas to Energy Operation
(LFGTE Operation)
21 Landfill Lane
Coventry, VT 05825

Permitted Component: Landfill Operation
21 Landfill Lane
Coventry, VT 05825

Owner and Operator: Landfill Operation
New England Waste Services of Vermont, Inc.
(NEWSVT)
25 Greens Hill Lane
Rutland, VT 05701

FINDINGS OF FACT

(A) FACILITY DESCRIPTION

New England Waste Services of Vermont, Inc. (also referred to herein as "NEWSVT" or "Permittee") owns and operates a municipal solid waste (MSW) landfill (Landfill Operation) on Landfill Lane in the town of Coventry, Vermont. Coventry Clean Energy Corporation (also referred to herein "CCEC") owns and operates a landfill gas to energy facility (LFGTE Operation) that is located on property leased from NEWSVT at the unlined area of the Landfill Operation. The LFGTE Operation combusts landfill gas (LFG) from the Landfill Operation in internal combustion engines and uses these LFG-fired engines to power electrical generators, generating electrical power for sale on the regional electric grid.

The Landfill Operation and the LFGTE Operation are considered to be a single source of air emissions and are collectively referred to herein as "Facility". Allowable emissions from the Facility are the aggregate of emissions from the Landfill Operation and the LFGTE Operation as noted below. NEWSVT is the Permittee for the Landfill Operation as permitted under #AOP-17-018, and CCEC is the Permittee for the LFGTE Operation as permitted under #AOP-18-019.

The Landfill Operation is comprised of the original unlined landfill, also referred to as Areas A & B, that operated from approximately 1970 until 1992 when it was closed and capped. In 1993 a new, lined landfill began operations near the original landfill and consists of Phases I, II, III and IV. Phase III reached its capacity, and Phase IV began acceptance of refuse in 2006.

NEWSVT had previously proposed a Phase V expansion to excavate and relocate the unlined landfill Areas A & B, placing the approximately 146,000 Mg of excavated refuse into the lined landfill area. The proposed Phase V landfill expansion would be located in the 11-acre footprint of the former Areas A & B and would have a capacity of approximately 1,943,650 Mg of refuse. Approval to relocate the refuse in Areas A & B and the Phase V expansion is contingent on NEWSVT obtaining all necessary permits, approvals and/or variances. At a minimum, this would require a Solid Waste Certification approval from the Agency of Natural Resources, Department of Environmental Conservation, Waste Management and Prevention Division.

NEWSVT has commenced construction of the previously permitted Phase VI expansion to the Landfill Operation. NEWSVT's Phase VI expansion at the Facility was not anticipated to increase annual LFG volumes beyond those associated with previous expansions, as approved in #AOP-14-034. However, the Phase VI expansion will result in changes to the area and volume of the Landfill Operation, and the requirements for complying with air quality regulations as a result of these changes are addressed by #AOP-17-018.

The LFGTE Operation was constructed in 2005, with the installation of three (3) CAT G3520C LE LFG fired internal combustion engines (CAT G3520C engine) that begin operating on July 12, 2005. A fourth CAT G3520C engine was installed and began operating on January 12, 2007, and a fifth CAT G3520C engine was installed and began

operating on June 22, 2009. In 2016, a siloxane removal system (SRS) was installed at the LFGTE Operation to reduce the siloxane concentrations in LFG combusted in the CAT G3520C engines at the LFGTE Operation. The SRS commenced operation in 2017. The SRS removes siloxanes from the LFG before the LFG is combusted in the CAT G3520C engines and combusts these siloxanes in an enclosed flare that is part of the SRS.

NEWSVT is required to actively collect LFG generated by refuse decomposition at the Landfill Operation and route the LFG to a control system to thoroughly destroy the non-methane organic compounds (NMOCs) contained in the LFG. The LFG collection system consists of a series of LFG collection points including vertical wells drilled into refuse-containing areas of the Landfill Operation as well as horizontal collection trenches and leachate cleanout piping, all connected by piping to a vacuum blower that maintains a negative pressure in the lines to extract LFG from the Landfill Operation.

Collected LFG is either combusted in flares owned and operated by NEWSVT or transferred to CCEC where it is treated to remove water and impurities before being used as a gaseous fuel in the five (5) CAT G3520C engines at the LFGTE Operation. The five (5) CAT G3520C engines at the LFGTE Operation are rated to generate a maximum of 8.0 megawatts (MW) of electrical power.

NEWSVT has commenced the Phase VI expansion to the Landfill Operation, which will increase landfill capacity by approximately 13,068,000 cubic yards and increase the surface area of the Landfill Operation by 51.2 acres. The composition of refuse in the landfill is anticipated to change with the full implementation of Act 148, which mandates the removal of the majority of compostable refuse from material being landfilled by 2020. This change was anticipated to reduce the LFG generation rate of the landfill when compared to historic generation rates. Given this, even though the landfill will be larger, its annual generation of LFG was not anticipated to increase even though the period of time during which the landfill will generate LFG will increase. Currently, the landfill is estimated to capture approximately 5,000 standard cubic feet per minute (scfm) of LFG that is generated. Emissions estimates in this permit are the same as #AOP-17-018, which were based on up to 5,545 standard cubic feet per minute (scfm), with 5,000 scfm of this LFG being captured and combusted.

NEWSVT has submitted a minor construction modification to the existing Title V Permit to Operate for the Facility. It includes the modification of the previously constructed Surface Active Foam Fractionation (SAFF) system, to exhaust to the ambient air and associated support equipment. The SAFF system is a landfill leachate treatment system intended to remove perfluoroalkyl and polyfluoroalkyl substances (PFAS) compounds from leachate so the treated leachate may be disposed of in municipal wastewater treatment plants in Vermont. The SAFF system includes the installation of a new emergency electrical generator and new emission points to the ambient air from the SAFF System for volatile organic compounds (VOCs) and hazardous air compounds (HACs) contained in the leachate, requiring a construction amendment to the existing Air Quality Permit to Construct and Operate. These modifications are not anticipated to result in exceedances of the criteria pollutant allowable emissions from the Facility. Accordingly, these modifications are considered as a single minor construction modification to NEWSVT's existing Title V Permit to Operate (#AOP-17-018).

CCEC has not proposed any changes to the operation of the LFGTE Operation as part of this application.

Upon issuance of this Permit, the approved operations at the Facility include the following air pollution related operations, equipment and emission control devices:

Landfill Operation - Specifications			
Landfill Area/Phase	Years of Operation ¹	Refuse Capacity (Mg) ² / Landfill Size (acres)	Cumulative Facility Refuse Capacity (Mg) ² / Landfill size (acres) ³
Unlined landfill Areas A & B	1970 - 1992	146,050 / (11 acres)	146,050 / (11 acres)
Landfill Phases I, II, III, and IV	1993 - 2020	7,504,427 / (90 acres)	7,650,477 / (90 acres)
Landfill Phase V (proposed but not yet permitted)	2032 - 2035	1,854,738 / (13.8 acres)	9,359,165 / (92.8 acres)
Landfill Phase VI (proposed)	2021 - 2031	7,348,659 / (51.2 acres)	16,707,824 / (144 acres)
Landfill Operation - LFG Combustion Devices			
LFG Combustion Device	Size/Rating ⁴	Gas capacity ⁵	Location, stack height
One (1) John Zink Utility Ground Flare	12" dia. / 75 MMBtu/hr	2,500 scfm	Lined Landfill; 35' minimum.
One (1) Parnel Biogas Utility Ground Flare	12" dia. / 77.8 MMBtu/hr	2,500 scfm	Lined Landfill; 35' minimum.
Two (2) LTI Model CF-5 Passive Flares (to be removed with relocation of refuse in Areas A & B)	2" dia.	60 scfm each	Unlined Landfill: (1) at Area A, (1) at Area B. Minimum 8' stack height each.
Landfill Operation - Miscellaneous Equipment			
Equipment	Rating	Location	
SAFF System including froth flotation equipment and one (1) -granular activated carbon (GAC) adsorptive vessel(s) on the air exhaust from processing tank T-03A. ⁶	100,000 gallons / day leachate treatment capacity 80 scfm total exhaust airflow	Proposed 2025 SAFF System Building	

Landfill Operation - Miscellaneous Equipment		
Equipment	Rating	Location
SAFF System Backup Emergency Electrical Generator rated at 230 kWe and powered by a Cummins QSL9 Tier 3 emissions certified engine rated at no more than 353 bhp	353 bhp /230 kWe ⁴	SAFF System Building
Cement mixing as part of the foamate encapsulation process	Not Specified	SAFF System Building
Two (2) Used oil Furnaces	300,000 Btu/each	Maintenance garage
Four (4) No. 2 Fuel-oil fired Portable Space Heaters	2 x 110,000 Btu/each 1 x 175,000 Btu/each 1 x 215,000 Btu/each	Maintenance garage
One (1) Fuel-oil fired Portable Space Heater	85,000 Btu/each	Scale house
One (1) Safety-Kleen parts cleaner.	---	Maintenance garage
One (1) Used Oil Tank	2,000 gallons	Maintenance garage
Two (2) Used Oil Tanks	500 gallons each	Maintenance garage / Scale House
Two (2) Diesel Fuel Tanks	10,000 gallons each	Landfill depot / Contractor staging area
Various lubricating oil, hydraulic oil, heating oil and Used oil tanks	<500 gallons each	Various
Four (4) Leachate storage tanks	1 x 20,000 gallon each 1 x 30,000 gallon each 2 x 438,000 gallon each	Landfill Operation Landfill Operation Landfill Operation

LFGTE Operation - Equipment		
Equipment	Rating	Location
Five (5) CAT G3520C Engines Engine 1, 2, and 3: Installed March 2005 Engine 4: Delivered January 12, 2007 Engine 5: Delivered on June 17, 2009	2,221 bhp (1,600 kW) each engine 507 scfm LFG fuel flow each engine	LFGTE Operation. 34' minimum stack height
Two (2) Ethylene Glycol Storage Tanks	1,000 gallons each	LFGTE Operation
One (1) Used Oil Tank	2,000 gallons	LFGTE Operation

LFGTE Operation - Equipment		
Equipment	Rating	Location
One (1) Lube Oil Storage Tank	8,000 gallons	LFGTE Operation
One (1) Olympian DP100P1 100 kW emergency generator powered with a Perkins 1006-6TG manufactured April 28, 2005	140 bhp	LFGTE Operation
LFG pretreatment system: IES LFG scrubbing system including a demister knock-out vessel, four (4) gas blower units, three (3) gas cooling units with separator knock-out vessel, one (1) mechanical gas chiller for process water.	2,500 scfm	LFGTE Operation
LFG Siloxane Removal System (SRS): Two (2) temperature swing non-carbon adsorptive desiccant media beds, coalescing pre-filter and particulate after-filter, one (1) media regeneration skid with blower and electrically heated desorption hot air system, one (1) Regen Air pre-heater heat exchanger in loop with engine jacket water piping, enclosed ground flare for destruction of desorbed siloxanes, H ₂ S, and VOCs.	2,500 scfm LFG inlet, 200 acfm desorption gas at 300F to be mixed with 100 acfm LFG at flare for combustion.	LFGTE Operation

¹ Years of operation are approximate and are estimated for Phase IV, V and VI.

² Mg – Mega grams. To convert to English tons, multiply the Mg value by 1.1025.

³ The Phase V expansion will overlay Areas A and B and encroach into areas included as part of Phases I, II, and III, resulting in a 2.8-acre net increase to the surface area covered by Areas A and B, and Phases I, II, and III.

⁴ bhp – brake horsepower rated output as specified by the manufacturer. kWe - kilowatt electrical output.

⁵ scfm - standard cubic feet per minute of LFG. LFG is assumed to contain 40% - 60% methane with the balance predominately carbon dioxide but also includes ~524 ppm nonmethane organic compounds (NMOCs) based on previous LFG sampling and analysis at the Landfill. The maximum LFG generation rate is predicted to be 5,436 scfm in 2036 based on the LandGEM model ver. 3.02 with values of L_0 of 120 M³ / Mg and k of 0.06 yr⁻¹ from present to 2020. Assumed values of L_0 of 100 M³ / Mg and k of 0.05 yr⁻¹ were assumed for the years 2021 and beyond to account for the change in refuse composition from the full implementation of Vermont's Universal Recycling Law (Act 148). LFG capture efficiency is assumed to be 85% over the life of the Landfill. Collected gas volumes have been assumed to not exceed 5,000 scfm.

⁶ Permittee has proposed the GAC system solely as an odor control device. The Agency is not reviewing the GAC system as a control system for HAPs, HACs, or VOCs.

(B) FACILITY CLASSIFICATION

The Facility is classified as a source of air contaminants pursuant to Title 10 of the *Vermont Statutes Annotated* ("10 VSA") §555 and §5-401(16) [Any source...which would otherwise be subject to regulation pursuant to the Clean Air Act, as amended (42 USC 7401, et seq.)] and (17) [Such other sources as may be designated as air contaminant sources by the Air Pollution Control Officer on a case-by-case basis] of the *Vermont Air Pollution Control Regulations* (hereinafter "*Regulations*").

In addition, §5-101 of the *Regulations* defines a *stationary source* as any structure(s), equipment, installation(s), or operation(s), or combination thereof, which emit or may emit any air contaminant, which is located on one or more contiguous or adjacent properties

and which is owned or operated by the same person or persons under common control. Based on this definition, all of the equipment, operations, and structures at the Facility are grouped together by the Agency of Natural Resources, Department of Environmental Conservation, Air Quality & Climate Division (hereinafter "Agency") as one stationary air contaminant source for purposes of review under the *Regulations*.

Accordingly, the Landfill Operation and the LFGTE Operation are considered to be a single source of air emissions and are collectively referred to herein as "Facility". Allowable emissions from the Facility are the aggregate of emissions from the Landfill Operation and the LFGTE Operation. Two separate operating permits have been prepared for this single Facility. NEWSVT is the Permittee for the Landfill Operation as permitted herein and CCEC is the Permittee for the LFGTE Operation as permitted under #AOP-18-019. NEWSVT has proposed a minor construction modification to permit the operation of the SAFF system to exhaust to the ambient air as part of their current operating permit (#AOP-17-018)

(C) PRIOR AGENCY ACTIONS/APPROVALS

The Facility has been issued the following "Permit to Construct" approvals pursuant to 10 VSA §556 and §§5-501 and/or 5-502 of the *Regulations* and the following "Permit to Operate" approvals pursuant to 10 VSA §556a and Subchapter X of the *Regulations*.

Prior Agency Approvals and Actions	
Date of Action	Description of Agency Approval/Action
November 13, 1992	#AP-92-020 – Original Agency Permit to Construct approval for construction of the lined landfill at the Facility. The Permit included requirements for gas collection and control on the existing unlined landfill that was to be closed and the proposed lined landfill expansion at the same site.
December 15, 1995	#AP-92-020A – Amended Permit to Construct to allow interim "passive" gas collection with passive flare controls on the closed <u>unlined</u> landfill rather than "active" gas collection as required for the <u>lined</u> landfill. This Permit and #AP-92-020 approved Phase I and Phase II of the lined landfill. Construction approval for Phase III was included in the Solid Waste Certification issued jointly by the Air and Solid Waste Programs on July 9, 1999.
December 16, 2004	#AOP-03-044 - Major modification Permit to Construct and initial Title V Permit to Operate approving Phases I-IV and an LFGTE Operation comprised of 4 CAT G3520C engines rated at 2,221 bhp and 1.6 MW each for a total of 6.4 MW of power.
June 24, 2008	#AOP-06-060 – Major modification Permit to Construct and Title V Operating permit approving the Phase V expansion, and the addition of one (1) CAT G3520C engine rated at 2,221 bhp and 1.6 mW to the existing LFGTE Operation. This brings the total number of CAT G3520C engines in the LFGTE Operation at the Facility to five (5), and the total output of the LFGTE Operation to 8.0 MW of electric power

Prior Agency Approvals and Actions	
Date of Action	Description of Agency Approval/Action
March 4, 2016	#AOP-14-034 – Major modification Permit to Construct and Title V Operating permit approving an increase in the generation of LFG from the Landfill Operation to 5,545 scfm of LFG and the addition of an additional flare to combust LFG. This permit also reassigned the responsibility for the operation of the five (5) CAT G3520C engines to at the LFGTE Operation to Coventry Clean Energy under a separate Title V Air Quality Permit to Construct and Operate (#AOP-15-032).
August 1, 2018	#AOP-17-018 – Modification of the “Permit to Construct and Operate” for the Facility approving a Phase VI expansion and any changes in the associated LFG volumes.

(D) FACILITY PERMIT APPLICABILITY

As noted above, the Facility is classified as a source of air contaminants under §5-401 of the *Regulations*. Pursuant to 10 VSA §556 and §5-501 of the *Regulations* a Permit to Construct, or an amendment to any existing Permit to Construct, must be obtained before commencing the construction, installation, modification or operation of an air contaminant source. The proposed operation of the SAFF unit with emissions to the ambient air and the installation of the SAFF System’s supporting emergency electrical generator is considered a modification to the Facility under the *Regulations* and consequently a Permit to Construct must be obtained.

Pursuant to 10 VSA §556a and Subchapter X of the *Regulations* a Permit to Operate is required for any air contaminant source with allowable emissions of all air contaminants combined of ten (10) tons per year (“tpy”) or more or that is otherwise subject to Title 40 *Code of Federal Regulations* (“40 CFR”) Part 70.

The Facility currently operates under a Title V Permit to Operate issued on August 1, 2018. The allowable emissions from the Facility are estimated to be greater than the ten (10) tpy combined threshold for applicability with Subchapter X of the *Regulations*, and emissions of carbon monoxide (CO) are estimated to be in excess of the one hundred (100) tpy threshold for the applicability of Title V of the federal Clean Air Act.

Therefore, pursuant to §§5-1002, 5-1003, and 5-1005 of the *Regulations* the Facility is classified as a “Title V Subject Source” and must obtain a Permit to Operate consistent with the requirements of §5-1005(b) of the *Regulations* and Title 40 *Code of Federal Regulations* (“40 CFR”) Part 70. In accordance with these Regulations, an application for a revised Permit to Operate is required to be submitted within one year from commencement of operation of the SAFF system as constructed. The Permittee submitted this application to the Agency on December 12, 2025. The allowable emissions for the Facility are summarized below:

Allowable Air Contaminant Emissions (tons/year) ¹					
PM/PM ₁₀ /PM _{2.5}	CO	NO _x	SO ₂	VOCs	HAPs
20.5	507	< 99	< 40	< 50	<34/39 ²

¹ PM/PM₁₀/PM_{2.5} – total particulate matter, total particulate matter of 10 micrometers in size or smaller and total particulate matter of 2.5 micrometers in size or smaller, respectively. Unless otherwise specified, all PM is assumed to be PM_{2.5}; SO₂ – sulfur dioxide; NO_x – oxides of nitrogen measured as NO₂ equivalent; CO – carbon monoxide; VOCs – volatile organic compounds; HAPs – hazardous air pollutants as defined in §112 of the federal Clean Air Act.

² Emissions of an individual HAP (formaldehyde) are estimated to be less than 34 tpy and emissions of total HAPs combined are estimated to be less than 39 tpy.

(E) REVIEW OF CRITERIA POLLUTANT EMISSIONS FOR THE PERMIT TO CONSTRUCT

(a) New Source Review Designation

The Facility, prior to the construction of the proposed modification, is designated as a major stationary source of air contaminants since it has allowable emissions of a single air contaminant of fifty (50) tons per year or greater. Consequently, any *modification* of the source that would result in a significant increase in emissions of any air contaminant, as defined in §5-101 of the *Regulations*, is designated as a major modification and is subject to review under §5-501 and §5-502 of the *Regulations*. The proposed project identified in Findings of Fact (A) above, together with all previous minor modifications constructed at the Facility since July 1, 1979, and which have not been previously reviewed under §5-502 of the *Regulations*, will not result in a significant increase in emissions. Consequently, the proposed modification is designated as a non-major modification subject to §5-501 of the *Regulations*. However, the Facility remains subject to the major source permitting requirements of §5-502 of the *Regulations*.

(b) Most Stringent Emission Rate

Pursuant to §5-502 of the *Regulations*, the owner/operator of each new major stationary source or major modification must apply control technology adequate to achieve the Most Stringent Emission Rate ("MSER") with respect to those air criteria pollutants for which there would be a major or significant actual emissions increase, respectively, but only for those currently proposed physical or operational changes which would contribute to the increased emissions.

The proposed project is designated as a non-major modification of a stationary source and therefore is not subject to review under the MSER requirements in §5-502 of the *Regulations*.

Prior MSER Evaluations: The Facility was previously reviewed under §5-502 of the *Regulations* for modifications to the Facility approved on March 4, 2016. These modifications to the Facility included:

- Revising the MSER for the Facility for the CO emission limitations on the

CAT 3520C engines.

- An increase of approximately 90 tons in Facility CO emissions as a result of revisions to the MSER.
- Installation of new ground flares for the Landfill Operation and the SRS at the LFGTE Operation.
- Increasing the stack height of the CAT 3520 engines by five (5) feet.

The modification to revise the CO emission limitations on the CAT 3520C engines was determined to be a major modification for CO emissions. The following MSER determinations have been made at this Facility:

Most Stringent Emission Rate Determinations		
Permit #	Pollutant	Description/Emission limit
Established under: #AOP-03-044	CO	CAT G3520C Engines: 2.75 g/bhp-hr and 13.5 lb/hour (each) John Zink Flare: 0.37 lb/MMBtu
CO Re-established under: #AOP-06-060 CO superseded below.	NOx	CAT G3520C Engines: 0.5 g/bhp-hr and 2.45 lb/hour (each) John Zink Flare: 0.068 lb/MMBtu
Established under: #AOP-14-034 / AOP-15-032	CO	CAT G3520C Engines – 3.5 g/bhp-hr and 17.3 lb/hr (each) applies at all times 3.1 g/bhp-hr and 15.3 lb/hr (each) must be demonstrated every two (2) years 2.75 g/bhp-hr and 13.5 lbs/hour (each) must be demonstrated every six (6) years John Zink & Parnel Biogas Flares: 0.37 lb/MMBtu

(c) Ambient Air Quality Impact Evaluation

An ambient air quality impact evaluation for criteria pollutants is performed to demonstrate whether or not a proposed project will cause or contribute to violations of the national ambient air quality standards and/or significantly deteriorate existing air quality for the regulated criteria pollutants.

Based on the anticipated increase in emissions from this modification to the Facility, the modification is not anticipated to cause or contribute to a violation of any national ambient air quality standard or significantly deteriorate air quality. Therefore, an air quality impact evaluation was not required by the Agency for the proposed project.

Prior Air Quality Impact Evaluations: The Facility was previously required to conduct an AQIE for modifications to the Facility approved on March 4, 2016. The modifications to the Facility included the installation of an additional utility flare at the Facility, a revision to the MSER for the CAT 3520C engines to increase the allowable CO emission limit to 3.5 g/bhp-hr, and an increase in the volume of LFG

to be generated by the Landfill Operation to 5,545 standard cubic feet per minute (scfm), with 5,000 scfm of this LFG being captured and combusted.

An AQIE was conducted for the pollutants CO, NO_x, PM/PM₁₀/PM_{2.5} and SO₂. Since proposed CO emission increases also exceeded the significance threshold of fifty (50) tons per year, the Agency's implementation procedures required the AQIE to determine which other nearby sources, if any, were to be included in the analysis. Under these conditions, any other nearby source that has a significant impact area for a respective pollutant that overlaps with the proposed Facility's significant impact area for that same pollutant must be included in the AQIE. All other nearby sources are assumed to be included in the ambient background value for the pollutant. The ambient background value is determined from the Agency's ambient monitoring network throughout the State. For PM, the nearby sources potentially required to be included in the AQIE were the Columbia Forest Products facility (CFP) in Newport, Vermont and the Ethen Allen, Inc. facility (EAO) in Orleans, Vermont. However, since the significant impact areas for CFP or EAO did not overlap with the Facility's significant impact area for PM_{2.5}, these facilities were not included in the AQIE. The Facility emissions used in the AQIE are based on the maximum projected volumes of LFG generation and the highest level of emissions generated, which is the engines burning the maximum amount of gas they are capable of, and any excess gas being burned in the flares. The engines have higher emission rates than the flares and similar dispersion characteristics thus the scenario involving engine operation is worst case for ambient impacts.

The Facility was found to comply with all applicable ambient air quality standards and prevention of significant deterioration increments at the time of issuance.

NAAQS Review – #AOP-14-034 / #AOP-15-032						
Pollutant	Averaging Period	Modeled Concentration (µg/m ³)	Background (µg/m ³)	Sum (µg/m ³)	AAQS (µg/m ³)	Pass?
CO	8-hr	480.5	1,260	1,740.5	10,305	Yes
NO _x	1-hr	104.1	65.8	169.9	188	Yes
	Annual	2.1	13.4	15.5	100	Yes
PM _{2.5}	24-hr	7.5	18.0	25.5	35	Yes
	Annual	0.86	6.8	7.7	15	Yes
PM ₁₀	24-hr	8.3	34.0	42.3	150	Yes
SO ₂	1-hr	139.8	47.1	186.9	196	Yes
	3-hr	103.3	47.1	150.4	1,309	Yes

PSD Increment Review – #AOP-14-034 / #AOP-15-032						
Pollutant	Averaging Period	Modeled Concentration (µg/m ³)	Maximum Allowable Class II PSD Increment Standard (µg/m ³)	Previously Consumed Class II PSD Increment (µg/m ³)	Class II PSD Increment Available (µg/m ³)	Pass?
NO _x	Annual	2.1	25	7.4	11.8	Yes
PM _{2.5}	24-hr	6.4	9	0	6.8	Yes
	Annual	0.64	4	0	1.0	Yes
PM ₁₀	24-hr	8.3	30	0	22.5	Yes
SO ₂	3-hr	103.3	512	0	512	Yes

(d) Applicable Requirements

The operations at the Facility are subject to the following state and federal laws and regulations, the requirements of which are embodied in the conditions of this Permit.

(i) Vermont Regulations:

Applicable Vermont Regulations
Chapter 5 – Vermont Air Pollution Control Regulations
Section 5-201 – Prohibition of Open Burning
Section 5-211(2) - Prohibition of Visible Air Contaminants, Installations Constructed Subsequent to April 30, 1970.
Section 5-221(1) - Prohibition of Potentially Polluting Materials in Fuel, Sulfur Limitation in Fuel.
Section 5-221(2) - Prohibition of Potentially Polluting Materials in Fuel, Used Oil.
Section 5-231(3) - Prohibition of Particulate Matter; Combustion Contaminants.
Section 5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter.
Section 5-241 – Prohibition of Nuisance and Odor.
Section 5-261(2) – Control of Hazardous Air Contaminants - Hazardous Most Stringent Emission Rate.
Section 5-402 – Written Reports When Requested.
Section 5-403 – Circumvention.
Section 5-404 – Methods for Sampling and Testing of Sources.

Applicable Vermont Regulations
Section 5-405 – Required Air Monitoring.
Section 5-406 – Required Air Modeling.
Section 5-407 – Prevention of Air Contaminant Emissions.
Section 5-408 – Change in Ownership or Operational Control.
Section 5-409 – False or Misleading Information.
Subchapter VIII – Registration of Air Contaminant Sources.
Subchapter X – Operating Permits.
Chapter 38 – Other Applicable Vermont Regulations
Chapter 38-301 – Rules Regarding Phase-down of the use of Hydrofluorocarbons
<i>This rule may apply to the Facility if air conditioning and refrigeration equipment are owned and operated by the Permittee.</i>

(ii) Existing Air Pollution Control Permit to Construct and/or Operate

The Facility currently operates under the confines of two Permits to Construct and Operate issued on August 1, 2018 (#AOP-17-018 and #AOP-18-019). The conditions within those existing permits are considered applicable requirements pursuant to §5-1002 of the *Regulations*. The requirements of this permit are in addition to the other existing permits for the Facility.

(iii) Federal Requirements:

Federal Regulations and Clean Air Act Requirements Applicable to the Facility
40 <i>CFR</i> Part 60 Subpart Cc – Emission Guidelines for Municipal Solid Waste Landfills. Applies to existing landfills having a design capacity greater than or equal to 2.5 million megagrams by mass and 2.5 million cubic meters by volume which commenced construction, modification, or reconstruction before May 30, 1991, and that have accepted waste at any time since November 8, 1987, or have additional capacity for future waste deposition.
<i>Emission guidelines are not directly applicable requirements to a facility but rather establish the framework on which a state must adopt a regulation to implement the respective requirements. Vermont has no landfills applicable to these Subpart Cc guidelines and has thus not adopted regulations to implement them. The Landfill Operation was modified subsequent to May 30, 1991, to increase its capacity, thus becoming subject to 40 <i>CFR</i> Part 60 Subpart WWW instead of the Subpart Cc emission guidelines.</i>

Federal Regulations and Clean Air Act Requirements Applicable to the Facility

40 CFR Part 60, Subpart Cf - Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills. Applies to existing landfills having a design capacity greater than or equal to 2.5 million megagrams by mass and 2.5 million cubic meters by volume which commenced construction, reconstruction, or modification on or before July 17, 2014.

Emission guidelines are not directly applicable requirements to a Facility but rather establish the framework on which a state must adopt a regulation to implement the respective requirements. While the Landfill Operation met the applicability criteria in 2017 for the Subpart Cf guidelines, the Agency, in consultation with the US EPA, deferred adoption of an implementing regulation in 2017, since at this time, the Facility was in compliance with the substantive requirements of the guidelines.

The Facility has since commenced construction, reconstruction, or modification of the Facility on or about 3 September 2019 (after July 17, 2014) and therefore became subject to 40 CFR Part 60 Subpart XXX. It no longer is subject to the guidelines of 40 CFR Part 60, Subpart Cf.

The Facility complies with the requirements of 40 CFR Part 60 Subpart XXX.

40 CFR Part 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984. Applicability: The affected facility to which this subpart applies is each storage vessel with a capacity greater than or equal to 75 m³ (19,804 gal) that is used to store volatile organic liquids (including petroleum). This subpart does not apply to the following:

1. Any storage vessel with a capacity less than 75 m³
2. Any storage vessel storing a liquid with a vapor pressure less than 3.5 kPa
3. Any storage vessel with a capacity > 75 m³ and <151 m³ with a v.p. <15.0 kPa
4. Pressure vessels >29.7 psi and without emissions to the atmosphere.
5. Vessels permanently attached to mobile vehicles.
6. Vessels located at bulk gasoline plants.
7. Vessels located at gasoline service stations.

For affected facilities, there are recordkeeping requirements and depending upon the material stored there may be standards for the tank's vent system.

The storage tanks at the Facility store No. 2 fuel oil, new and used engine oil, ethylene glycol, and landfill leachate, all of which have a vapor pressure of less than 3.5 kPa. Accordingly, the Facility has no storage tanks subject to this regulation.

40 CFR Part 60, Subpart WWW - Standards of Performance for Municipal Solid Waste Landfills. §60.752 Standards - Requires landfill gas collection and control system. §60.753 Operational Standards - Operational requirements of the gas collection and control system. Applicable to all MSW landfills with a design capacity of 2.5 million megagrams (Mg) or greater, however the requirement to install the landfill gas collection and control system is only required once uncontrolled emissions of nonmethane organic compounds (NMOCs) from the landfill equal or exceed 50 Mg/year.

On March 26, 2020, revisions were made to 40 CFR 60 Subpart WWW that stated that "An affected municipal solid waste landfill must continue to comply with this subpart [WWW] until it... Modifies or reconstructs after July 17, 2014, and thus becomes subject to subpart XXX of this part..." Given the facility is subject to 40 CFR 60 Subpart XXX, the Facility is no longer subject to the NSPS Subpart WWW requirements.

**Federal Regulations and Clean Air Act Requirements
Applicable to the Facility**

40 CFR Part 60, Subpart XXX - Standards of Performance for Municipal Solid Waste Landfills That Commenced Construction, Reconstruction, or Modification After July 17, 2014. Requires landfill gas collection and control system. §60.762 Standards for air emissions from municipal solid waste landfills. Applicable to all MSW landfills with a design capacity of 2.5 million mega-grams (Mg) or greater, however the requirement to install the landfill gas collection and control system is only required once uncontrolled emissions of nonmethane organic compounds (NMOCs) from the landfill equal or exceed 34 Mg/year.

The Facility has become subject to this regulation at the time construction commenced on Phase VI of the Landfill Operation on or about 3 September 2019. The Landfill Operation has an existing design capacity (unlined through Phases IV and Phase VI) of 14,999,136 Mg and Phase V will add an additional capacity of 1,854,738 Mg (or a net capacity of 1,708,688 Mg considering the waste from the unlined landfill). Uncontrolled NMOC emissions were predicted to first exceed 34 Mg prior to 2001.

40 CFR Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE). Applies to CI RICE model year 2007 and later as well as those ordered after July 11, 2005, and with an engine manufacture date after April 1, 2006. This standard also applies to stationary CI RICE that are modified or reconstructed after July 11, 2005. This regulation established emission rates for affected engines, requires routine engine maintenance and sets maximum sulfur content for the diesel fuel. Beginning October 1, 2010, applicable engines shall only use diesel fuel with a maximum sulfur content of 15 ppm (ULSD).

This regulation is not applicable to the CAT 3520C engines at the LFGTE Operation as these engines are spark ignition rather than compression ignition. Subpart IIII is applicable to the proposed Tier 3 Cummins QSL9 353 bhp engine for the proposed Leachate PFAS DSHAD emergency generator. Subpart IIII is not applicable to the Perkins 1006-6TG engine powering the emergency generator at the LFGTE Operation. The engine was not ordered after July 11, 2005, and was manufactured before April 1, 2006.

40 CFR Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. Applies to new spark ignition engines ordered after June 12, 2006, AND manufactured on or after July 1, 2007.

Engines No 1, 2, and 3 were ordered before June 12, 2006, and manufactured before July 1, 2007, and therefore are not subject to this regulation.

Engine No. 4 was ordered after June 12, 2006 (order date Nov.6, 2006) but the engine was manufactured before July 1, 2007 (build date Oct. 26, 2006) and was delivered on January 12, 2007. Accordingly, this engine is not subject to Subpart JJJJ.

Engine No. 5 was delivered on June 17, 2009 and Subpart JJJJ applies to this engine.

**Federal Regulations and Clean Air Act Requirements
Applicable to the Facility**

40 *CFR* Part 61, Subpart M - National Emission Standards for Hazardous Air Pollutants: National Emission Standard for Asbestos. Applies to: the owner or operator of a demolition or renovation activity, including regulated asbestos-containing material (RACM) demolition and renovation operations, which are regulated under §61.145 of this Subpart. Waste generated from these activities shall be disposed of in accordance with the requirements of §61.150 of this Subpart. Waste disposal facilities receiving waste that is to be disposed of in accordance with §61.150 of this Subpart shall be operated in accordance with the provisions of §61.154 of this Subpart.

Waste disposal facilities subject to this rule, shall be operated with no visible emissions to the outside air from areas of RACM disposal, or shall have barriers and signage restricting access to areas of RACM disposal, or shall cover areas of RACM disposal on a daily basis. Waste disposal facilities receiving RACM shall also maintain records of material receipt and shall submit records to the Administrator identifying areas of RACM disposal upon closure of the landfill and shall notify the Administrator prior to disturbing areas of RACM disposal.

Subpart M is anticipated to apply to the Facility, specifically to disposal of RACM at the Landfill Operation.

40 *CFR* Part 63, Subpart AAAA - National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills. §63.1955 Standards - Requires gas collection and control system meeting the same standards as 40 *CFR* Part 60, Subpart XXX by referencing such. Applicable to all MSW landfills that are (1) a major source of Hazardous Air Pollutants (HAPs), or (2) are collocated with a major source of HAPs, or (3) are an area source with a design capacity of 2.5 million megagrams (Mg) or greater and have estimated uncontrolled emissions of NMOCs equal to or greater than 50 Mg/year. Beginning no later than September 27, 2021, all landfills described in § 63.1935 must meet the requirements of this subpart.

The Facility is subject to this regulation. The Landfill Operation is not a major source of HAPs but is collocated with the LFGTE Operation which is a major source of HAPs and the Landfill Operation has a design capacity of 2.5 million Mg or greater and has estimated uncontrolled emissions of NMOCs greater than 50 Mg/year.

**Federal Regulations and Clean Air Act Requirements
Applicable to the Facility**

40 CFR Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines. Applies to new engines >500 hp that commenced construction (installed) on or after December 19, 2002, at a major source of HAPs. Also applies to existing engines of greater than 500 bhp that commenced construction (installed) prior to December 19, 2002, located at major HAP sources. Engines <500 hp that are located at major sources of HAPs are considered existing if they were installed before June 12, 2006.

A new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions which combusts landfill or digester gas equivalent to 10 percent or more of the gross heat input on an annual basis must meet the initial notification requirements of §63.6645(f) and the requirements of §§63.6625(c), 63.6650(g), and 63.6655(c). These stationary RICE do not have to meet the emission limitations and operating limitations of Subpart ZZZZ.

An existing emergency-use only stationary RICE with a rating of < 500 hp located at a major source of HAP emissions is subject to maintenance requirements and must install an elapsed hour meter.

Engines No 1, 2, and 3 were installed at the Facility in March 2005, making the Facility a major HAP source since HAP emissions from these three engines combined likely exceeded the 10 ton per year emission of a single HAP (formaldehyde). Thus, these three engines are subject to the new engine requirements of a major HAP source under Subpart ZZZZ.

Engine No. 4 was delivered on January 12, 2007, and Subpart ZZZZ at that time required new engines to comply with NSPS Subpart JJJJ. However, the applicability of NSPS Subpart JJJJ was written to apply to engines manufactured on or after July 1, 2007. Thus, Subpart ZZZZ applies to this engine but has no applicable requirements and the engine is not subject to NSPS Subpart JJJJ.

Engine No. 5 was delivered on June 17, 2009, and complies with the requirements of Subpart ZZZZ by conforming to the requirements of 40 CFR Part 60, Subpart JJJJ.

The Perkins 1006-6TG engine powering the emergency generator at the LFGTE Operation was installed before June 12, 2006. This engine is rated at approximately 140 hp. This engine is considered as an existing emergency-use only stationary RICE < 500 hp, and must install an elapsed hour meter, is subject to maintenance requirements including changing oil & filter and, inspecting and replacing, if necessary, air filter, hoses, and belts.

The proposed Tier 3 Cummins QSL9 353 bhp emergency engine powering the emergency electrical generator at the SAFF system is also subject to Subpart ZZZZ. By complying with 40 CFR 60 Subpart IIII, the emergency diesel engine complies with 40 CFR 63 Subpart ZZZZ.

**Federal Regulations and Clean Air Act Requirements
Applicable to the Facility**

Clean Air Act §§114(a)(3) Inspections, Monitoring and Entry; 502(b) Permit Programs; and 504(a)-(c) Permit Requirements and Conditions; 40 *CFR* Part 64 Compliance Assurance Monitoring; 40 *CFR* Part 70 §§70.6(a)(3)(i)(B) and 70.6(c)(1) State Operating Permit Programs - Permit content. Upon renewal of a Title V Permit to Operate, a facility must comply with enhanced monitoring and compliance assurance monitoring requirements if applicable. The CAM rule applies to each Pollutant Specific Emission Unit (PSEU) at a major source that is required to obtain a part 70 or part 71 permit if the unit satisfies all of the following criteria: 1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant other than an emissions limitation or standard that is exempt under §64.2(b)(1) [exempt limitations include emission limitations or standards proposed by the Administrator after November 15, 1990 pursuant to Section 111 or 112 of the Act], 2) The unit uses a control device to achieve compliance with any such limit or standard; and 3) The unit has pre-control device emissions of the applicable regulated pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

The CAM rule applies to the CAT 3520C engines and the flares at the Facility. The engines and flares are considered an emission control device for VOCs. CAM is being established as continuous monitoring for the presence of a flame on the flares when they are combusting LFG and continuous monitoring and recording of engine exhaust temperature and compliance testing at least once every two years for combustion efficiency of 98% or outlet NMOC concentration of 20 ppmvd and CO emission rate.

Clean Air Act §112r Prevention of Accidental Release; 40 *CFR* Part 68 Chemical Accident Prevention Programs. Facilities that have more than the threshold quantity of a regulated substance in a process are subject to these provisions including the requirements to conduct a hazard assessment, establish a prevention program and develop a risk management plan.

The Permittees have stated that neither Operation at the Facility stores greater than the threshold quantity of a regulated substance and thus are not subject to these requirements.

Clean Air Act §608 National recycling and emission reduction program; 40 *CFR* Part 82, Protection of Stratospheric Ozone, Subpart F – Recycling and Emissions Reductions. This requirement is applicable to any facility that owns, services, maintains, repairs, and disposes of appliances containing ozone depleting substances.

This regulation is applicable to the handling of material disposed of at the Landfill Operation that contains ozone depleting substances, and the Trane RTAA 125-ton rotary chiller at the LFGTE Operation.

**Federal Regulations and Clean Air Act Requirements
Applicable to the Facility**

40 CFR Part 98 Mandatory Greenhouse Gas Reporting. Requires reporting of GHG emissions annually to EPA for 1) facilities in source categories listed in §98.2(a)(1) including electric utility units subject to Acid Rain, MSW landfills that generate CH₄ in amounts equivalent to 25,000 metric tons of CO₂e or more per year and electrical transmission and distribution equipment at facilities where the total nameplate capacity of SF₆ and PFC containing equipment exceeds 17,820 pounds, 2) facilities in source categories listed in §98.2(a)(2) including electronics manufacturing, iron and steel production and pulp and paper manufacturing that emit 25,000 metric tons of CO₂e or more per year from such source categories as well as all stationary combustion, 3) facilities with stationary combustion sources that aggregate to 30 MMBTU/hr or more and which emit 25,000 metric tons of CO₂e or more per year from all stationary combustion sources combined, and 4) fuel suppliers including all local natural gas distribution companies.

The U.S. EPA has retained the implementing authority for this regulation and is responsible for determining applicability. This regulation under Part 98 is not considered to be an applicable requirement per 40 CFR Part 70.2 and as noted in 74 FR 56260 (October 30, 2009). Part 98 is anticipated to apply to the Landfill Operation at the Facility and NEWSVT has been reporting emissions for applicable years.

(b) Non-Applicable Requirements

Pursuant to §5-1015(a)(14) of the *Regulations*, an owner or operator of a Facility may request a permit shield from specific state or federally enforceable regulations and standards which are not applicable to the source. The Permittee has not requested a permit shield with regard to the proposed modifications addressed under this permit.

(c) Enforceability

This section delineates which permit conditions are federally enforceable and which conditions are state only enforceable. All federal enforceable conditions are subject to federal citizen suit provisions. All conditions of this Permit are enforceable by both state and federal authorities.

(d) Compliance Certification

The Permittee is required by its current operating Permit to certify compliance as part of its annual registration with the Agency pursuant to the requirements of Subchapter X of the *Regulations*. Additionally, this Permit requires the submission of semi-annual reports of monitoring records used to demonstrate compliance with the limitations contained in its current operating Permit, and those contained in this construction permit.

(G) CONTROL OF HAZARDOUS AIR CONTAMINANTS

Pursuant to §5-261 of the *Regulations*, any stationary source subject to the rule⁶ with current or proposed actual emissions of a hazardous air contaminant (HAC) equal to or greater than the respective Action Level (found in Appendix C of the *Regulations*) shall be subject to the Regulation and shall achieve the Hazardous Most Stringent Emission Rate (HMSEER) for the respective HAC. HMSEER is defined as a rate of emissions which the Secretary, on a case-by-case basis, determines is achievable for a stationary source based on the lowest emission rate achieved in practice by such a category of source and considering economic impact and cost. HMSEER may be achieved through application of pollution control equipment, production processes or techniques, equipment design, work practices, chemical substitution, or innovative pollution control techniques.

While LFG is primarily composed of methane and carbon dioxide from decomposing refuse within a landfill, the LFG becomes contaminated with volatile compounds contained in the refuse as it flows through the refuse in the landfill. These compounds are collectively referred to as non-methane organic compounds (NMOCs), and many of the NMOCs are also HACs. As part of the review for Air Pollution Control Permit #AP-92-020 issued November 13, 1992, the Agency determined that the Facility would have regulated emissions of several hazardous air contaminants in excess of their respective Action Levels if the LFG was allowed to vent to the ambient air uncontrolled. The Agency subsequently determined HMSEER to be the installation and operation of a LFG collection and control system that captures the LFG and routes it to a combustion device with a minimum ninety-eight (98) percent destruction efficiency of the NMOCs. Flares designed and operated in accordance with 40 CFR Part 60.18 were and still are considered an acceptable method of compliance with this requirement. None of the emissions were estimated to exceed their respective Action Levels after initiation of the emission controls.

Since that original permit, samples of the LFG at the Facility have been collected and analyzed for NMOCs/HACs in both 1993 (indicating an NMOC concentration of 525 ppm) and again in 2002 (indicating an NMOC concentration of 561 ppm). Based on the 1993 and 2002 results, emissions of several HACs from the Facility are anticipated to be in excess of their respective Action Level if allowed to vent uncontrolled and therefore the Facility is subject to HMSEER under §5-261 of the *Regulations*. Also, since that original permit, the U.S. EPA has promulgated two similar federal regulations that require similar gas collection and control requirements, to which the Facility is now subject. The Agency determined in #AOP-17-018 and #AOP-18-019 that HMSEER shall be the requirement to effectively capture the LFG and achieve the minimum 98% destruction efficiency of the NMOCs in the collected LFG as required by the prior HMSEER and the federal regulations or alternatively demonstrate that the outlet concentrations of NMOCs from the treatment devices are less than 20 ppmvd as hexane. In addition, the Facility must also comply with various Federal requirements, as outlined in the federal applicability table above, for the collection of the LFG to ensure as much LFG is collected and destroyed as is technically feasible and for monitoring of the LFG collection and control system operations.

⁶ APCR §5-261(1)(c)(ii) provides that solid fuel burning equipment (not including incinerators) installed or constructed prior to January 1, 1993, and all fuel burning equipment which combust virgin liquid or gaseous fuel shall not be subject to the requirements of §5-261.

In addition to NMOC/HACs contained within the LFG, anaerobic decomposition of landfill refuse also generates sulfur compounds, principally hydrogen sulfide (H_2S), from sulfur containing material, such as sheetrock, that is placed in a landfill. The uncontrolled emissions for H_2S from the Landfill Operation are anticipated to exceed the AL for H_2S , and the Agency has determined that HMSER for H_2S emissions shall be the same as that for NMOC/HAC emissions, namely effective capture of the LFG and 98% destruction efficiency of NMOCs as a surrogate for evaluating H_2S destruction efficiency.

Volatile HAC compounds are contained in leachate from the Landfill Operation. NEWSVT has provided information on HAC compounds based on historical leachate sampling and has provided estimates for emissions of these compounds from operation of the SAFF System. The estimated HAC emissions from the SAFF system did not include any additional HAC compounds beyond those identified in previous permits as exceeding their respective Action Levels.

The Agency has determined it is not appropriate to revise the previously determined HMSER for the Facility at this time based on the estimated emissions for the SAFF provided by NEWSVT in the application. Stack testing is required as part of this Permit, and the results of the stack testing will be reviewed as part of the development of the subsequent Title V Operating Permit for the Facility.

Formaldehyde and acetaldehyde are formed and emitted from the CAT 3520C engines at the Facility as a result of incomplete combustion of LFG, and these formaldehyde and acetaldehyde emissions are anticipated to exceed the AL. Formaldehyde and acetaldehyde emissions from internal combustion engines are typically managed with catalytic treatment of the exhaust gas. However, combusted siloxanes in the exhaust will create silica deposits on any catalytic treatment system, rendering these treatment systems ineffective in short order. It is unclear at this time if the siloxane removal system operating at the LFGTE Facility that treats the LFG before combustion in the engines will reduce siloxanes to a level that would enable effective use of a catalyst. The Agency has reviewed control technologies at several landfills at other locations in the US that have installed catalytic treatment systems for the control of formaldehyde and CO emissions. However, these systems do not have sufficient long-term performance data to evaluate catalyst performance and/or longevity. The Agency will re-evaluate the use of a catalyst for formaldehyde and acetaldehyde control in the future when there is a better understanding of the long-term performance of oxidative catalysts on LFG-fired engines. This HMSER evaluation will be revised under the revised Title V Operating permit for the Facility (#AOP-25-058).

The Agency has previously determined that management of formaldehyde and acetaldehyde emissions will consist of effective management of engine combustion efficiency. Emissions of CO will be used as a surrogate to monitor engine combustion efficiency, and the CO limitations will be the same as the MSER limitations for CO emissions.

Silicon dioxide (SiO_2 or silica) is formed by combustion of siloxanes contained in the LFG. Based on the Agency's understanding of the siloxane content of the LFG at the Facility,

the silica emissions from the Facility will exceed the AL for all forms of silica. CCEC has installed a siloxane removal system to remove some portion of the siloxanes from the LFG prior to combustion in the engines. Total PM emissions will be used as a surrogate for silica emissions. Accordingly, the Agency has determined that HMSER is not to exceed 20.5 tons per year limit on total PM emissions from the Facility.

This HMSER evaluation will be revised under the revised Title V Operating permit for the Facility (#AOP-25-058). The prior HMSER determinations for this Facility are presented below.

Hazardous Most Stringent Emission Rate Determinations		
Permit #	Pollutant	Description/Emission limit
Established under: #AP-92-020 Superseded below.	NMOCs including: benzene ethylene dichloride methylene chloride perchloroethylene trichloroethylene vinyl chloride	HMSER: 98% destruction of NMOCs achieved through the installation and operation of a properly designed LFG collection and control system.
Established under: #AOP-03-044 Re-established under: #AOP-06-060 Superseded below.	NMOCs including: acrylonitrile benzene chloroform 1,1,2-trichloroethane 1,1,2,2-tetrachloroethane ethylene dibromide ethylene dichloride hydrogen sulfide methylene chloride perchloroethylene propylene dichloride trichloroethylene vinyl chloride	HMSER: 98% destruction of NMOCs achieved through the installation and operation of a properly designed LFG collection and control system. Alternatively to demonstrating 98% destruction, the Facility may demonstrate that the outlet concentration of NMOCs from the combustion device does not exceed 20 ppmvd ¹ (as hexane equivalent) at 3% oxygen.

Hazardous Most Stringent Emission Rate Determinations		
Permit #	Pollutant	Description/Emission limit
Established under: #AOP-14-034 Re-established under #AOP-17-018 and #AOP-18-019	NMOCs including but not limited to: 1,2-Dichloroethane 1,2-Dichloropropane 1,1,1-trichloroethane 1,1,2-trichloroethane 1,1,2,2-tetrachloroethane - acrylonitrile - benzene - bromodichloromethane - chloroform - ethyl mercaptan - formaldehyde - methylene chloride - trichloroethylene - vinyl chloride hydrogen sulfide (H₂S) Combustion byproducts: - formaldehyde - acetaldehyde silica (SiO₂)	<u>HMSEER for NMOCs and H₂S:</u> 98% destruction of NMOCs achieved through the installation and operation of a properly designed LFG collection and control system. Alternatively, to demonstrating 98% destruction, the Facility may demonstrate that the outlet concentration of NMOCs from the combustion device does not exceed 20 ppmvd¹ (as hexane equivalent) at 3% oxygen. <u>HMSEER for Formaldehyde and Acetaldehyde:</u> Maintenance and operation of the Cat G3520C engines to maintain good combustion efficiency. CO emissions will be used as a surrogate for formaldehyde and acetaldehyde emissions as well as evidence of proper combustion of NMOC/HACs and H₂S. The CO limits for the Cat G3520C engines will be as follows: – 3.5 g/bhp-hr and 17.3 lb/hr (each) applies at all times. 3.1 g/bhp-hr and 15.3 lb/hr (each) must be demonstrated once every two years 2.75 g/bhp-hr and 13.5 lbs/hour (each) must be demonstrated once every 6 years. <u>HMSEER for silica:</u> Total PM emissions will be used as a surrogate for silica emissions. Total PM emissions will be limited to less than 20.5 tons per year from the Facility.

¹ 20 ppmvd is parts per million by volume on a dry basis and is the alternative emission limit as provided in the federal regulations 40 CFR Part 60 §60.752 and Part 63 §63.1955.

Based on the Agency's review of the Facility's application and the above Findings of Fact, the Agency concludes that the Facility, subject to the following Permit conditions, complies with all applicable state and federal air pollution control laws and regulations. Therefore, pursuant to 10 VSA §§556 and 556a, as amended, the Agency hereby issues a Permit approving the Facility, as described in the above Findings of Fact, subject to the following:

PERMIT CONDITIONS

- Construction and Equipment Specifications -

- (1) The Permittee shall construct and operate the equipment installed under this permit in accordance with the plans and specifications submitted to the Agency and in accordance with the conditions set forth herein, including the equipment specifications as listed in Findings of Fact (A) or their equivalent as approved by the Agency.

Operation of existing equipment at the Facility shall be in conformance with the operating requirements as established under #AOP-17-018 and #AOP-18-019, issued on August 1, 2018, or the most recent air pollution control permit(s) to construct and / or operate issued by the Agency. [10 V.S.A. §556(c)] [§5-409 and 5-501(1) of the *Regulations*]

- (2) The Permittee shall operate the SAFF system in a manner consistent with the SAFF system manufacturer's operation and maintenance recommendations. Appropriately sized granular activated carbon (GAC) canister(s) must be installed on the process exhaust (Tank-03A) as proposed by Permittee, as an odor control measure. The SAFF system and odor control equipment shall be maintained in good working order at all times and shall be operated in accordance with the manufacturer's operation and maintenance recommendations, in a manner consistent with good air pollution control practices for minimizing emissions, and in conformance with the Operations and Maintenance Plan (O&M Plan) required by Condition (24) of this Permit. Odor control equipment shall be in operation whenever the SAFF System is operating. [10 V.S.A. §556(c)] [§§5-231(1) and (4), §5-405, §5-421(2), §5-501, and 5-1015(a)(1), (3) and (4) of the *Regulations*] [Application for #AP-25-043]
- (3) **SAFF System Process exhaust flow rate:** The air flow rate exhaust rate from the SAFF system shall be measured using a properly calibrated flow meter device. The flow meter device will be installed in the air exhaust vent in accordance with the manufacturer's recommendations, be located downstream of Tank-03A, and equipped with a recording, non-resettable totalizer function. The flow meter will be used to measure the daily air exhaust flow rate from the SAFF system. Measurements shall be recorded electronically or in a logbook to document the airflow rates on sufficient intervals to perform the required 8-hour averaging. [10 V.S.A. §§556(c) and 556a(d)] [§5-405(1) of the *Regulations*] [§5-1015(a)(4) of the *Regulations*]
- (4) **Stack heights:** Stack height for existing equipment at the Facility shall be as shall be vented as required in #AOP-17-018 and #AOP-18-019, or the most recent air pollution control permit(s) to construct and / or operate issued by the Agency.

For the SAFF system and associated support equipment, the Agency recommends that

the exhaust(s) from this system and equipment be exhausted vertically through a stack(s) which extend a minimum of four (4) feet above the roof where the stack penetrates the roof and that they not be equipped with any device that may obstruct the upward discharge of the exhaust gases such as a fixed rain cap of a type that has not been approved by the Agency. The Agency may require the Permittee to increase the stack height, remove a rain cap, or conduct a dispersion analysis to verify compliance with ambient air quality standards for any stack at the Facility if, in the judgment of the Agency, adequate dispersion cannot be maintained at the current stack configuration. Adequacy may in part be based on the actual emission rate of air contaminants, the characteristics of the current stack configuration, or inspections of the Facility that indicate poor dispersion or that confirm significant visible emissions or nuisance or odor beyond the property line. [10 V.S.A. §556(c)] [§5-406 of the *Regulations*] [Application for #AP-25-043]

- Operational Limitations -

- (5) SAFF System Leachate Throughput Limitations: The annual quantity of landfill leachate processed through the SAFF system shall be the lesser of: (a) the measured leachate flow rate expressed in gallons per day as measured during the stack test as required under Condition (23) of this Permit and the gallons per day measured during this stack test multiplied by 365 days per year to obtain an annual flow volume per year for any rolling twelve consecutive calendar month period, OR (b) 100,000 gallons per day or 36,525,000 gallons per year for any rolling twelve consecutive calendar month period. [10 V.S.A. §556(c)] [Application for #AP-25-043]
- (6) SAFF System Exhaust Limitations: The airflow rate through the process exhaust (Tank-03A) shall be the lesser of: (a) the actual measured airflow rate expressed in cubic feet per minute as measured during the stack test as required under Condition (23) of this Permit, OR (b) not exceed 80 standard cubic feet per minute (scfm) on an 8-hour average basis. [10 V.S.A. §556(c)] [Application for #AP-25-043] §5-241(2) and §5-405 of the *Regulations*]
- (7) Stationary and Non-Road Diesel Engines Fuel Specifications: Only fuel oils meeting the requirements of ultra-low sulfur diesel or distillate (ULSD) with a maximum sulfur content of 0.0015 percent by weight (15 ppm) may be used in all stationary and non-road (portable) diesel engines powered equipment operated at the Facility, including but not limited to diesel fueled emergency and non-emergency electric generators. [10 V.S.A. §556(c)] [§§5-221(1)(a), 5-501 and 5-1015(a)(1) of the *Regulations*] [Application for #AP-25-043]
- (8) Stationary Reciprocating Internal Combustion Engines: The Permittee shall not install or operate a stationary reciprocating internal combustion engine, as defined in the *Regulations*, unless the engine complies with §5-271 of the *Regulations* as may be applicable as well as any federal regulations as may be applicable including, but not limited to:
- (a) 40 CFR Part 60 Subpart IIII
 - (b) 40 CFR Part 60 Subpart JJJJ
 - (c) 40 CFR Part 63 Subpart ZZZZ

All engines, including emergency engines, installed on or after July 1, 2007, must comply

with the applicable emission standards of §5-271 immediately upon installation. Installation of any size engine, even those below 300 bhp, may still require approval from the Agency in the form of an amended permit prior to installation. [10 V.S.A. §556(c)] [§§5-271 and 5-501 of the *Regulations*]

- (9) Stationary Reciprocating Internal Combustion Engines: The Permittee shall install, operate and maintain each reciprocating internal combustion engine, and any after-treatment control device (if any), in accordance with the manufacturer's written instructions and in a manner consistent with good air pollution control practices for minimizing emissions. [10 V.S.A. §556(c)] [§§5-407, 5-501 and 5-1015(a)(1) of the *Regulations*]
- (10) Stationary Emergency Reciprocating Internal Combustion Engines: Stationary emergency reciprocating internal combustion engines, including those specified as such in Finding of Fact (A), shall be used only for emergency purposes and up to 100 hours per year for routine testing and maintenance, of which 50 hours may be for non-compensated non-emergency operation. Emergency purposes include periods of time when:
- (a) The usual source of power, heat or lighting is temporarily unavailable due to reasons beyond the reasonable control of the owner/operator;
 - (b) A fire or flood makes it necessary to pump water to minimize property damage.

In the event the Permittee must take action to restore the normal power source, the Permittee must take such action in a reasonable period of time. Emergency engines shall not be operated as part of any other ISO or utility peaking or load shedding activities without the approval of the Agency. The definition of emergency use for applicability to federal regulations NSPS Subpart IIII and NESHAP Subpart ZZZZ may be different and the Permittee should consult those regulations directly for applicability to those respective regulations. [10 V.S.A. §556(c)] [§§5-401(6)(c) and 5-501 of the *Regulations*]

- (11) Open Burning: Open burning is prohibited except as provided for in §5-202 of the *Regulations*. Prior to conducting open burning of any material, other than leaves, brush, or tree cuttings from normal grounds maintenance, the Permittee shall contact the Air Pollution Control Officer and obtain approval for such burning, if required. [10 V.S.A. §556(c)] [§5-202 of the *Regulations*]

- Emission Limitations -

- (12) Control of Facility SO₂ Emissions: Emissions of SO₂ from the Facility shall not equal or exceed 40 tons per rolling 12-month period.

The quantity of SO₂ emissions from the Facility shall be determined on a monthly basis in accordance with the following formula

$$\text{SO}_2 \text{ total} = \text{LFG}_{\text{month}} * \text{Concentration}_{\text{H}_2\text{S}} * 1.694\text{E-}7 \text{ lb SO}_2/\text{ppmv H}_2\text{S} \text{ -scf LFG}$$

Where:

$\text{LFG}_{\text{month}}$ = The total collected LFG flow in scf delivered to all combustion devices at the Facility in that month

Concentration_{H₂S} = Measured H₂S concentration in LFG in parts per million by volume for that month.

Compliance with this limit shall be documented through measuring and recording monthly LFG flow in standard cubic feet per minute (scfm) and H₂S concentration in parts per million by volume. Concentrations of H₂S may be measured using colorimetric tubes, electronic gas detection meters, or chemical analysis. One LFG sample shall be collected and analyzed annually for H₂S in a fixed-base chemical analytical laboratory to provide confirmation of H₂S concentrations measured using colorimetric tubes, electronic gas detection meters, or other field measurement methods. An alternative methodology for calculating SO₂ emissions may be used if approved in writing by the Agency. [10 V.S.A. §556(c)] [Application for #AOP-17-018]

- (13) Control of Facility PM Emissions: Commencing with emissions from the month of January 2017 forward, emissions of total PM from the Facility shall not equal or exceed 20.5 tons per rolling 12-month period. Monthly PM emissions shall be calculated in accordance with the following formulae:

$$\text{Equation 1: } \text{PM}_{\text{total}} = \text{PM}_{\text{siloxane removal system}} + \text{PM}_{\text{LFG flares}} + \text{PM}_{\text{engine combustion}}$$

$$\text{Equation 2: } \text{PM}_{\text{siloxane removal system}} = [\text{Si Concentration}_{\text{srs inlet}} - \text{Si Concentration}_{\text{srs outlet}}] * [1 \text{ cubic meter} / 35.31 \text{ cubic feet}] * [1 \text{ lb} / 453,592 \text{ mg}] * [\text{LFG}_{\text{treated}}] * [\text{Molecular weight of SiO}_2 / \text{Molecular weight of Si}] * [1 \text{ ton} / 2,000 \text{ lb}] + ([\text{LFG}_{\text{srs}}] * [\text{LFG Heat Value}] * [\text{Flare Emission Factor}] * [1 \text{ ton} / 2,000 \text{ lb}])$$

Where:

LFG_{treated} = Total collected LFG flow in scf treated by the SRS at the Facility in that month

Si Concentration_{srs inlet} = Si concentration in LFG before treatment by the SRS in mg Si / cubic meter

Si Concentration_{srs outlet} = Si concentration in LFG after treatment in SRS in mg Si / cubic meter

LFG_{srs} = Total LFG flow in scf used to fire the SRS flare in that month

LFG Heat Value = Heat Value of LFG in MMBtu/scf. A default value of 5.0E-4 MMBtu/scf may be used or a site specific value approved by the Agency.

Flare Emission Factor = 1.7E-2 lb/MMBtu

$$\text{Equation 3: } \text{PM}_{\text{LFG flares}} = ([\text{LFG}_{\text{month flare}}] * [\text{LFG Heat Value}] * [\text{Flare Emission Factor}] * [1 \text{ ton} / 2,000 \text{ lb}]) + ([\text{LFG}_{\text{month flares}}] * [\text{Si Concentration}_{\text{flares}}] * [1 \text{ cubic meter} / 35.31 \text{ cubic feet}] * [1 \text{ lb} / 453,592 \text{ mg}] * [\text{Molecular weight of SiO}_2 / \text{Molecular weight of Si}] * [1 \text{ ton} / 2,000 \text{ lb}])$$

Where:

LFG_{month flares} = Total collected LFG flow in scf delivered to the flare(s), excluding the SRS flare addressed in equation 2 above, at the Facility in that month

LFG Heat Value = Heat Value of LFG in MMBtu/scf. A default value of 5.0E-4 MMBtu/scf may be used or a site-specific value approved by the Agency.

Flare Emission Factor = 1.7E-2 lb/MMBtu

Si Concentration_{flares} = Si concentration in LFG to flare(s) in mg Si / cubic meter
 Molecular weight of Si = 28.09
 Molecular weight of SiO₂ = 60.08

Equation 4: $PM_{\text{engine combustion}} = [\text{Engine Emission Factor}] * [1 \text{ lb}/453.592 \text{ g}] * [\text{Hours of operation for 3520C engines}] * [3520\text{C engine rating}] * [\text{Capacity Factor}] * [1 \text{ ton}/2,000 \text{ lb}]$

Where:

Engine Emission Factor = 0.153 g/bhp-hr OR emission factor in g/bhp-hr obtained from stack testing performed as part of #AOP-15-032 at the Agency's discretion.

Hours of operation for 3520C engines = Total number of hours of operation for all 3520C engines in that month.

3520C engine rating = 2,221 bhp or a site-specific value approved by the Agency.

Capacity Factor = Measured electrical output in MW of all 3520C engines at the Facility in that month / Electrical Output_{theoretical}

Electrical Output_{theoretical} = Electrical output in MW of all 3520C engines at the Facility in that month assuming they are operated at 100 percent output for the hours operated.

Compliance with this limit shall be documented through measuring and recording:

- Monthly LFG flow treated by the SRS in standard cubic feet (scf).
- Monthly LFG flow to the CAT 3520C engines in standard cubic feet (scf).
- Monthly LFG flow to each of the flare(s) in standard cubic feet (scf)
- Silicon (Si) concentrations in untreated LFG in units of milligrams of Si per cubic meter of LFG measured annually.
- Silicon (Si) concentrations of LFG after treatment in the SRS in units of milligrams of Si per cubic meter of LFG.
- Monthly hours of operation for the five (5) 3520C engines at the Facility recorded to the nearest tenth (0.1) hour.

Concentrations of Si shall be measured before and after treatment in the siloxane removal system and shall be measured annually using sample collection and chemical analytical methods approved by the Agency. [10 V.S.A. §556(c)]

- (14) Control of Facility VOC Emissions: Emissions of VOCs from the Facility shall not equal or exceed 50 tons per rolling 12-month period.

The quantity of VOC emissions from the Facility shall be determined on a monthly basis in accordance with the following formulae:

Equation 1: $VOC_{\text{total}} = VOC_{\text{fugitive}} + VOC_{\text{flares}} + VOC_{\text{engine combustion}} + VOC_{\text{SAFF Unit}}$

Equation 2: $LFG_{\text{fugitive}} = [LFG_{\text{month}} / \text{Percent Capture Efficiency}] * [1 - \text{Percent Capture Efficiency}]$

Equation 3: $VOC_{\text{fugitive}} = [LFG_{\text{fugitive}}] * [4.99\text{E-}5 \text{ lb VOC/scf LFG}] * [1 \text{ ton}/2,000 \text{ pounds}]$

Where:

LFG_{month} = The total collected LFG flow in scf delivered to all combustion devices at the Facility in that month

LFG_{fugitive} = The total fugitive LFG emitted from the Facility in that month

Percent Capture Efficiency = 0.85

Percent Fugitive Emissions = [1 - Percent Capture Efficiency]

Percent capture efficiency is expressed as a decimal equivalent (i.e. 85% = 0.85)

$$\text{Equation 4: VOC}_{\text{flares}} = [\text{LFG flow in scf delivered to flares}] * [4.99\text{E-}5 \text{ lb VOC/scf LFG}] * [1 - \text{Destruction Efficiency}] * [1 \text{ ton}/2,000 \text{ pounds}]$$

Where:

Destruction Efficiency = 0.98

Percent destruction efficiency is expressed as a decimal equivalent (i.e. 98% = 0.98)

$$\text{Equation 5: VOC}_{\text{engine combustion}} = [\text{Total Engine Operating Hours} * \text{Engine Horsepower}] * [\text{Capacity Factor}] * [\text{VOC Emission Factor}] * [1 \text{ lb}/453.59 \text{ g}] * [1 \text{ ton}/2,000 \text{ pounds}]$$

Where:

Total Engine Operating Hours = The total operating hours for all 3520C engines at the Facility in that month.

Engine Horsepower = Rated output of a 3520C engine, or 2,221 bhp

Capacity Factor = Measured electrical output in MW of all 3520C engines at the Facility in that month / Electrical Output_{theoretical}

Electrical Output_{theoretical} = Electrical output in MW of all 3520C engines at the Facility in that month assuming they are operated at 100 percent output for the hours operated.

VOC Emission Factor = 39 percent of the measured NMOC emission factor from the most recent annual engine emissions testing performed as required by Condition (27) of #AOP-18-019 in grams per brake horsepower-hour plus the measured emission factor of 0.302 grams per bhp-hr for formaldehyde and 0.004 grams per bhp-hr for acetaldehyde obtained from stack testing performed in February 2017.

$$\text{Equation 6: VOC}_{\text{SAFF System}} = [\text{Total SAFF System Operating Hours}] * [\text{VOC Emission Rate in lb/hr}] * [1 \text{ ton}/2,000 \text{ pounds}]$$

Where:

Total SAFF System Operating Hours = The total operating hours for the SAFF system in that month.

VOC Emission Rate = VOC Emission Rate of 0.018 lb/hr as provided in the application for #AP-25-043 until results from Stack Testing in Condition (23) of this Permit are

available. At that time, the stack test emission results in lb/hr will be used to estimate VOC emissions from the SAFF System.

Monthly VOC emissions from the Facility shall be summed for a rolling 12-month period and evaluated to ensure they are less than 50 tons per year. Compliance with this limit shall be documented through measuring and recording total monthly LFG flow in standard cubic feet (scf), monthly LFG flow in scf to the flares, the total monthly engine operating hours for all 3520C engines at the Facility, and the measured electrical output produced by the 3520C engines at the Facility. [10 V.S.A. §556(c)]

- (15) Stationary Compression Ignition Reciprocating Internal Combustion Engines: The following stationary compression ignition reciprocating internal combustion engines at the Facility shall at a minimum meet the respective US EPA engine tier emission certification standards of 40 CFR Part 1039 as noted below:

Engine Specific US EPA Engine Tier Emission Certifications	
Engine:	EPA Part 1039 Tier Emission Certification
SAFF System DSHAD 230 kWe Emergency Electrical Generator Cummins QSL9 emergency-only engine rated at no more than 353 bhp	Tier 3

Any emission testing conducted to demonstrate compliance with the respective emission limits shall be performed in accordance with 40 *CFR* Part 60, Appendix A, Reference Methods 5, 7E, and 10 or equivalent methods approved in writing by the Agency at the rated load and speed of the engine. Alternatively, compliance may be demonstrated by verifying that the engine has met the respective US EPA engine tier emission certification requirements of 40 *CFR* Part 1039, 1065 and/or 1068. [10 V.S.A. §556(c)] [§5-404 of the *Regulations*]

- (16) Visible Emissions [Facility Wide]: Emissions of visible air contaminants from any installation at the Facility, except where otherwise noted in this Permit, shall not exceed twenty (20) percent opacity for more than a period or periods aggregating six (6) minutes in any hour and at no time shall visible emissions exceed sixty (60) percent opacity.

Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with 40 *CFR* Part 51, Appendix M, Methods 203B and 203C, respectively, or equivalent methods approved in writing by the Agency. [10 V.S.A. §556(c)] [§§5-211(2), and 5-404 of the *Regulations*]

- (17) Volatile Organic Compounds: Emissions of volatile organic compounds from the Facility shall not equal or exceed fifty (50) tons per calendar year per year based on any rolling twelve (12) consecutive calendar month period. [10 V.S.A. §556(c)] [§5-502 of the *Regulations*]
- (18) Hazardous Air Pollutants: Emission of federally regulated hazardous air pollutants (HAPs) from the Facility shall not equal or exceed thirty-nine (39) tons of total combined HAPs per calendar year per year based on any rolling twelve (12) consecutive calendar month

period or thirty-four (34) tons of any individual HAP per calendar year per year based on any rolling twelve (12) consecutive calendar month period. [10 V.S.A. §§556(c) and 556a(d)] [§§5-261 and 5-501 of the *Regulations*] [40 CFR Part 63]

- (19) Hazardous Air Contaminants: Emissions of state hazardous air contaminants (HACs) from the applicable operations at the Facility shall not equal or exceed their respective Action Level (found in Appendix C of the *Regulations*) unless the Agency has reviewed and approved such HAC emission under §5-261(2) of the *Regulations*. [10 V.S.A. §556(c)] [§5-261 of the *Regulations*]
- (20) Fugitive Particulate Matter Emissions: The Permittee shall take reasonable precautions at all times to control and minimize emissions of fugitive particulate matter from the operations at the Facility. Reasonable precautions to be taken shall include the following measures or other equally effective measures for those operations or activities under the Permittee's control or supervision:
- (a) The use of wet suppression, calcium chloride applications or other dust control measures as necessary to minimize fugitive dust from all unpaved roads and traffic areas, aggregate handling operations and storage piles at the Facility. The paved portions of the haul roads and traffic areas shall be periodically sprayed with water and swept to prevent buildup of material that may generate fugitive dust emissions.
 - (b) The covering of all trucks owned or operated by the Permittee while operated on public roadways and loaded with materials that may generate fugitive dust emissions.
 - (c) Taking reasonable measures to limit airborne dust during concrete mixing for encapsulation of foamate from the SAFF process. Such measures may include, but are not limited to, minimizing drop distances for dry concrete, covering or enclosing mixing vessels, the use of water misting to add water to dry concrete, and general housekeeping to remove any buildup of finely divided cement materials that may generate fugitive dust emissions.

[10 V.S.A. §556(c)] [§§5-231(4) and 5-407 of the *Regulations*]

- (21) Nuisance and Odor: The Permittee shall not discharge, cause, suffer, allow, or permit from any source whatsoever such quantities of air contaminants, or odors beyond the property line of a premises, which will cause injury, detriment, nuisance or annoyance to any considerable number of people or to the public or which endangers the comfort, repose, health or safety of any such persons or the public or which causes or has a natural tendency to cause injury or damage to business or property. [10 V.S.A. §556(c)] [§5-241(1) of the *Regulations*]

- Compliance Testing and Monitoring -

- (22) SAFF System Stack Testing Feasibility Evaluation: The Permittee shall perform a technical feasibility study for one-time emission testing on the SAFF System exhaust both upstream and on the exhaust side of the GAC odor control canister using each of the following methods:

- (a) OTM 50 – Volatile PFAS;
- (b) OTM 45 – Acidic PFAS;
- (c) Method 0010 sampling with 8270 GC-MS analysis (future OTM-55 method); and
- (i) Targeted analysis for fluorotelomer alcohols (FTOHs) and select 8270 compounds.

The Permittee shall furnish the Agency with a written summary of the technical issues and either an affirmative or negative statement regarding the technical feasibility of the above-described emissions testing within one hundred twenty (120) days of issuance of this Permit. [10 V.S.A. §§554, 556] [§§5-402, 5-404(4) and 5-405 of the *Regulations*]

- (23) **Stack Testing of SAFF System Emissions:** The Permittee shall perform one-time emission testing on the exhaust from the SAFF System. The stack test must be conducted in conformance with the leachate throughput limitation requirements of Condition (5) of this Permit and the airflow limitation requirements of Condition (6) of this Permit. Leachate flow rates through the SAFF system must be measured and recorded during the stack test. Stack test samples will be analyzed for total VOC using EPA approved analytical methods as approved by the Agency.

Chemical analysis of stack test samples shall be performed for the following individual HAP/HAC/VOC compounds if detection limits are technically achievable that will allow comparison to the Action Levels in Appendix C of the *Regulations*:

Proposed Leachate PFAS Treatment System Stack Test Analytes						
CAS #	VOC (Y/N)	HAP (Y/N)	HAC (Y/N)	Compound Name	Reported in LFG	Reported in Leachate
71-55-6	N	Y	Y	1,1,1-Trichloroethane		No Leachate Sampling Data
79-00-5	Y	Y	Y	1,1,2-Trichloroethane		
79-34-5	Y	Y	Y	1,1,2,2-Tetrachloroethane		
75-34-3	Y	Y	Y	1,1-Dichloroethane		
75-35-4	Y	Y	Y	1,1-Dichloroethene (Vinylidene Chloride) (1,1-Dichloroethylene)		No Leachate Sampling Data
107-06-2	Y	Y	Y	1,2-Dichloroethane (Ethylene Dichloride)		
78-87-5	Y	Y	Y	1,2-Dichloropropane (Propylene Dichloride)		No Leachate Sampling Data
95-63-6	Y	N	Y	1,2,4 trimethylbenzene	Not Included in LFG HACs	
78-92-2	Y	N	Y	2-butanol (s-Butyl alcohol)		
591-78-6	Y	N	N	2-hexanone		
95-48-7	Y	Y	Y	2-methyl phenol (o-Cresol)		
108-39-4 & 106-44-5	Y	Y	Y	3-methyl phenol (m-Cresol) & 4-methyl phenol (p-Cresol)		
83-32-9	Y	N	N	acenaphthene		
75-07-0	Y	Y	Y	Acetaldehyde		No Leachate Sampling Data
67-64-1	N	N	Y	Acetone		
107-13-1	Y	Y	Y	Acrylonitrile		No Leachate Sampling Data
106-93-4	Y	Y	Y	1,2-Dibromoethane (Ethylene dibromide)		
106-46-7	Y	Y	N	1,4-Dichlorobenzene (p-dichlorobenzene)		

Proposed Leachate PFAS Treatment System Stack Test Analytes						
CAS #	VOC (Y/N)	HAP (Y/N)	HAC (Y/N)	Compound Name	Reported in LFG	Reported in Leachate
108-10-1	Y	Y	Y	4-Methyl-2-Pentanone (Methyl isobutyl ketone)		
71-43-2	Y	Y	Y	Benzene		
117-81-7	Y	Y	Y	bis (2- ethylhexy) phthalate	Not Included in LFG HACs	
75-27-4	Y	N	Y	Bromodichloromethane		No Leachate Sampling Data
75-15-0	Y	Y	Y	Carbon disulfide		
56-23-5	Y	Y	Y	Carbon tetrachloride		
463-58-1	Y	Y	N	Carbonyl sulfide		
156-59-2	Y	N	N	cis 1,2-dichloroethane	Not Included in LFG HACs	
108-90-7	Y	Y	Y	Chlorobenzene		No Leachate Sampling Data
75-00-3	Y	Y	N	Chloroethane (Ethyl Chloride)		
67-66-3	Y	Y	Y	Chloroform		
1319-77-3	Y	Y	Y	Cresol	Not Included in LFG HACs	
75-71-8	N	N	Y	Dichlorodifluoromethane		No Leachate Sampling Data
75-09-2	N	Y	Y	Dichloromethane (Methylene Chloride)		
60-29-7	Y	N	Y	Diethyl ether (ethyl ether)	Not Included in LFG HACs	
75-08-1	Y	N	Y	Ethyl mercaptan (Ethanethiol)		No Leachate Sampling Data
100-41-4	Y	Y	Y	Ethylbenzene		
86-73-7	Y	N	N	fluorene	Not Included in LFG HACs	
50-00-0	Y	Y	Y	Formaldehyde		No Leachate Sampling Data
110-54-3	Y	Y	Y	Hexane		
7783-06-4	N	N	Y	Hydrogen sulfide		
7439-97-6	N	Y	Y	Mercury		
78-93-3	Y	N	Y	Methyl ethyl ketone		
1634-04-4	Y	Y	Y	methyl tert-butyl ether		
91-20-3	Y	Y	Y	naphthalene	Not Included in LFG HACs	
85-01-8	Y	N	Y	phenanthrene		
108-95-2	Y	Y	Y	phenol		
99-87-6	Y	N	N	p-isopropyl toluene		
100-42-5	Y	Y	Y	styrene		
127-18-4	N	Y	Y	tetrachloroethene		
109-99-9	Y	N	Y	tetrahydrofuran		
108-88-3	Y	Y	Y	Toluene		
79-01-6	Y	Y	Y	Trichloroethylene (Trichloroethene)		No Leachate Sampling Data
75-01-4	Y	Y	Y	Vinyl chloride		
108-38-3 / 106-42-3 / 95-47-6	Y	Y	Y	Xylenes		

The Permittee shall collect samples of leachate influent and effluent from the SAFF System during the stack test and analyze these samples for the same compounds identified above to provide information regarding the amounts of VOC/HAP/HAC compounds that may be transferred to the SAFF exhaust.

The Permittee shall furnish the Agency with a written report of the results from the above testing / sampling within sixty (60) days after achieving the maximum production rate at which the Leachate PFAS Treatment System will be operated, but not later than one-hundred eighty (180) days after the issuance of this Permit. The stack test report will provide stack test sampling methodology, process flow rates of air exhaust and leachate throughput during the stack test and analytical testing results. Calculations of actual mass emission rates from the SAFF during the stack test will be presented along with calculated maximum emissions from the SAFF system at projected maximum process flow rates.

The emission testing shall be performed in order to evaluate estimated VOC emissions presented in the application for this Permit, and to assess if total Facility VOC emissions will remain below the Facility limit of 50-tons VOCs per rolling 12-month period.

At least thirty (30) days prior to performing the emission testing required above, the Permittee shall submit to the Agency a pretest report prepared in accordance with the Agency's "Source Emission Testing Guidelines". The pretest report will include an evaluation of the technical feasibility of achieving appropriate detection levels for each analyte identified in the above table. [10 V.S.A. §556(c)] [§§5-402, 5-404(1) and 5-405(1) of the *Regulations*]

(24) Operation and Maintenance Plan [SAFF System]: The Permittee shall develop, maintain and implement an operation and maintenance plan (O&M Plan) for the SAFF System, including maintenance, operation, and required calibration of the air exhaust flow meter device within thirty (30) days following commencement of operation of the unit in open loop mode. The purpose of said O&M Plan shall be to ensure optimum performance and the proper operation and maintenance of the SAFF system and the respective associated odor control systems. The O&M Plan shall include, but not be limited to:

- (a) The Facility's designated name or number and a detailed description of the location of the air exhaust air flow meter and air sampling ports in the T(03) exhaust line.
- (b) A description of routine maintenance and inspection procedures for each carbon unit, including, but not limited to, the methods for establishing the frequency of GAC replacement.
- (c) Provisions for maintaining records of such SAFF system maintenance and inspections as well as the findings of those inspections and any corrective actions which were taken; and
- (d) The design and site-specific installation of the airflow measurement equipment to be used, as well as the specific operation, maintenance and calibration procedures and frequencies to be followed.

Said O&M Plan shall be present at the Facility at all times and shall be made available to representatives of the Agency upon request. The Permittee shall revise said O&M Plan at the Agency's request or on its own motion based on operating experience or to reflect equipment or operational changes. [10 V.S.A. §556(c)] [§5-405 of the *Regulations*]

- Record Keeping and Reporting -

- (25) Records of Leachate Processing: The Permittee shall maintain records, in a logbook, or electronic record system, of the total quantity of leachate processed through the SAFF system, in gallons, each day. The Permittee shall make such records available to the Agency upon request. [10 V.S.A. §556(c)] [§5-405(1) of the *Regulations*]
- (26) Records of Emergency Generator/Engine Usage: The Permittee shall maintain records in a logbook, or electronic record system, of all hours of operation of each stationary emergency generator/engine and shall make such records available to the Agency upon request. The records shall include: the dates on which each engine was operated; the number of hours the engine was operated on the respective date, including the starting and ending hours shown on the engine's elapsed hour meter; the purpose of the operation be it emergency, testing or maintenance; and, if the purpose of the operation was for an emergency, the records shall include a brief description of the emergency and its cause. [10 V.S.A. §556(c)] [§5-405(1) of the *Regulations*]
- (27) Records: Records of all required compliance testing shall include the following:
- (a) the date, place, and time of sampling or measurements.
 - (b) the date analyses were performed.
 - (c) the company or entity that performed the analyses.
 - (d) the analytical techniques or methods used.
 - (e) the results of all such analyses; and
 - (f) the operating conditions existing at the time of sampling or measurement.
- [10 V.S.A. §556(c)] [§§5-402, 5-405(1) and 5-1015(5) of the *Regulations*]
- (28) Records: All records shall be retained for a minimum period of five (5) years from the date of record and shall be made available to the Agency upon request. [10 V.S.A. §556(c)] [§§5-402, 5-405(1) and 5-1015(a)(7) of the *Regulations*]
- (29) Notification: The Permittee shall notify the Agency in writing within ten (10) days of any violation, of which it is aware, of any requirements of this Permit. This notification shall include, at a minimum, the cause for the violation and corrective action or preventative maintenance taken to correct the violation. [10 V.S.A. §556(c)] [§§5-402 and 5-1015(a)(6) of the *Regulations*]
- (30) Notification: The Permittee shall notify the Agency in writing of the date of initial start-up of the SAFF system in open-loop mode, and emergency electrical generator, within fifteen (15) days after such date. [10 V.S.A. §556(c)] [§5-402 of the *Regulations*]
- (31) Notification: The Permittee shall notify the Agency in writing of any proposed physical or operational change at the Facility which may increase the emission rate of any air contaminant to the ambient air regardless of any concurrent emission reductions that may be achieved. This notification requirement includes the proposed installation of any new equipment that is a source of air pollution, including the replacement of an existing permitted air pollution source. If the Agency determines that a permit amendment is

required, a new application and the appropriate application fee shall be submitted. The permit amendment shall be obtained prior to commencing any such change except as may otherwise be allowed by the *Regulations*. [10 V.S.A. §556(c)] [§§5-402 and 5-501 of the *Regulations*]

- (32) Reporting: Semi-Annual Periodic Monitoring Reports: The Permittee shall submit semi-annual reports to the Agency postmarked by the 30th day following the end of each reporting period. The reporting periods shall cover operations from January 1st through June 30th and July 1st through December 31st. The semi-annual reports shall be signed by a responsible official of the Facility and contain the following information regarding the preceding six (6) month reporting period:

- (a) description and duration of all periods when the gas stream is diverted from the control devices.
- (b) all periods when the collection system was not operating in excess of five (5) days.
- (c) A summary of the Landfill Operation surface monitoring results including the location and concentration of each exceedance of the 500-ppm methane surface monitoring threshold.
- (d) the date and location of each new gas collection well added to the system.
- (e) A summary of the gas collection system well head inspections and vertical gas well extraction point monitoring results.
- (f) A summary of the operating status of the engines and flares.
- (g) A summary of all periods engine exhaust temperature during operation fell below the allowed level.
- (h) A summary of inspections and maintenance on the engines and flares.
- (i) A summary of the fuel usage records required by this Permit.
- (j) A statement of the sulfur content of any distillate fuel delivered to the Facility; and
- (k) A summary of any and all used oil analyses performed.
- (l) A summary of leachate volumes treated by the SAFF system.
- (m) A summary of maintenance & testing activity on the SAFF odor control system.

[10 V.S.A. §556(c)] [§§5-402, 5-405(1) and 5-1015(a)(5) of the *Regulations*]

- (33) Annual Registration: The Permittee shall calculate the quantity of emissions of air contaminants from the Facility annually. If the Facility emits more than five (5) tons of any and all air contaminants per year or if the Facility performs one or more of the air contaminant emitting operations listed in 5-802(2) of the *Regulations*, the Permittee shall register the source with the Secretary of the Agency (hereinafter "Secretary"), and shall renew such registration annually. Each day of operating a source which is subject to registration without a valid, current registration shall constitute a separate violation and subject the Permittee to civil penalties. The registration process shall follow the procedures set forth in Subchapter VIII of the *Regulations*, including the payment of the annual registration fee on or before May 15 of each year. [10 V.S.A. §556(c)] [Subchapter VIII §§5-802, 5-803, and 5-807 of the *Regulations*]

- (34) All records, notifications and reports that are required to be submitted to the Agency by this Permit shall be submitted to:

Air Quality & Climate Division
Department of Environmental Conservation

Agency of Natural Resources
Davis 4
One National Life Drive
Montpelier, Vermont 05620-3802

[10 V.S.A. §556(c)] [§5-402 of the *Regulations*]

- (35) All records, notifications and reports that are required to be submitted to the U.S. EPA by this Permit shall be submitted to:

Non-electronic:

Attn: Air Compliance Clerk
Director, Enforcement and Compliance Division
U.S. EPA Region I
5 Post Office Square
Suite 100 (04-2)
Boston, MA 02109-3912

Electronic:

Periodic reporting, performance test results, notification reports and other reporting that is required to be submitted electronically shall be submitted to EPA via the Compliance and Emissions Data Reporting Interface (CEDRI), which is located on EPA's [Central Data Exchange \(CDX\)](#).

[10 V.S.A. §556(c)] [§5-402 of the *Regulations*]

- Standard Permit Conditions -

- (36) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Agency which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. [10 V.S.A. §§556(c) and (g) [40 CFR Part 60.11(d) and 63.6(e)]]
- (37) Approval to construct or modify under this Permit shall become invalid if construction or modification is not commenced within eighteen (18) months after issuance of this Permit, if construction or modification is discontinued for a period of eighteen (18) months or more, or if construction is not substantially completed within a reasonable time. The Agency may extend any one of these periods upon a satisfactory showing that an extension is justified. The term "commence" as applied to the proposed construction or modification of a source means that the Permittee either has:
- (a) Begun, or caused to begin, a continuous program of actual on-site construction or modification of the source, to be completed within a reasonable time; or
 - (b) Entered into binding agreements or contractual obligations, which cannot be

cancelled or modified without substantial loss to the Permittee, to undertake a continuous program of actual on-site construction or modification of the source to be completed within a reasonable time.

[10 V.S.A. §556(c)] [§5-501 of the *Regulations*]

- (38) These Permit conditions may be suspended, terminated, modified, or revoked for cause and reissued upon the filing of a written request with the Secretary of the Agency (hereinafter "Secretary") or upon the Secretary's own motion. Any modification shall be granted only with the written approval of the Secretary. If the Secretary finds that modification is appropriate, only the conditions subject to modification shall be re-opened. The filing of a request for modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay any terms or conditions of this Permit. The Secretary may provide opportunity for public comment on any proposed modification of these conditions. If public comments are solicited, the Secretary shall follow the procedures set forth in 10 V.S.A. §556 and §556a, as amended. [10 V.S.A. §556a(g)] [§§5-1008(a) and 5-1008(e) of the *Regulations*]
- (39) The Permittee shall furnish to the Agency, within a reasonable time, any information that the Agency may request in writing to determine whether cause exists to modify, revoke, reissue, or terminate the Permit or to determine compliance with this Permit. Upon request, the Permittee shall also furnish to the Agency copies of records required to be kept by this Permit. [10 V.S.A. §556(c)] [§5-402 of the *Regulations*]
- (40) By acceptance of this Permit, the Permittee agrees to allow representatives of the State of Vermont access to the properties covered by the Permit, at reasonable times, to ascertain compliance with Vermont environmental and health statutes and regulations and with this Permit. The Permittee also agrees to give the Agency access to review and copy any records required to be maintained by this Permit, and to sample or monitor at reasonable times to ascertain compliance with this Permit. [10 V.S.A. §§556(c) and 557] [§§5-402, 5-404, and 5-1015(a)(10) of the *Regulations*]
- (41) All data, plans, specifications, analyses and other information submitted or caused to be submitted to the Agency as part of the application for this Permit or an amendment to this Permit shall be complete and truthful and, for Title V permit applications, certified by a responsible official whose designation has been approved by the Secretary. Any such submission which is false or misleading shall be sufficient grounds for denial or revocation of this Permit, and may result in a fine and/or imprisonment under the authority of Vermont statutes. [10 V.S.A. §556(c)] [§§5-409 and 5-1006(f) of the *Regulations*]
- (42) For the purpose of establishing whether or not a person has violated or is in violation of any condition of this Permit, nothing in this Permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed. [10 V.S.A. §556(c)]
- (43) Any permit noncompliance could constitute a violation of the federal Clean Air Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. [10 V.S.A. §556(c)] [§§5-1008(a) and 5-

1008(e) of the *Regulations*]

- (44) It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this Permit. [10 V.S.A. §556(c)]
- (45) No person shall build, erect, install or use any article, machine, equipment or other contrivances, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which otherwise would constitute a violation of these *Regulations*. [10 V.S.A. §556(c)] [§5-403 of the *Regulations*]
- (46) The provisions of this Permit are severable. If any provision of this Permit, or its application to any person or circumstances is held invalid, illegal, or unenforceable by a court of competent jurisdiction, the invalidity shall not apply to any other portion of this Permit which can be given effect without the invalid provision or application thereof. [10 V.S.A. §556(c)]
- (47) This Permit does not convey any property rights of any sort or any exclusive privilege, nor does it authorize any injury to private property or any invasion of personal rights. [10 V.S.A. §556(c)]
- (48) All subsequent owners and/or operators of this Facility must request an amendment and transfer of this Permit prior to commencing any operations covered by this Permit. All subsequent owners and/or operators shall submit to the Agency as part of the request for amendment all such information the Agency deems necessary to establish legal ownership and/or interest in the property and all such information the Agency deems necessary to ensure the new owners and/or operators will construct and operate the Facility in compliance with the *Regulations* and this Permit. The terms and conditions of this Permit shall remain in full force and effect after submittal of the request for amendment and until the issuance of an amended Permit or denial. Should the Secretary deny the request, the new owner and/or operator must take whatever action is necessary to comply with the denial. [10 V.S.A. §§556 and 556a] [§§5-408, 5-501, 5-1004, and 5-1013(a) of the *Regulations*]
- (49) Renewable Energy Projects – Right to Appeal to Public Utilities Commission: If this decision relates to a renewable energy plant for which a certificate of public good is required under 30 V.S.A. §248, any appeal of this decision must be filed with the Vermont Public Utilities Commission pursuant to 10 V.S.A. §8506. This section does not apply to a facility that is subject to 10 V.S.A. §1004 (dams before the Federal Energy Regulatory Commission), 10 V.S.A. §1006 (certification of hydroelectric projects) or 10 V.S.A. Chapter 43 (dams). Any appeal under this section must be filed with the Clerk of the Public Utilities Commission within 30 days of the date of this decision; the appellant must file with the Clerk an original and six copies of its appeal. The appellant shall provide notice of the filing of an appeal in accordance with 10 V.S.A. 8504(c)(2), and shall also serve a copy of the Notice of Appeal on the Vermont Department of Public Service (<https://publicservice.vermont.gov/>). For further information, see the Rules and General Orders of the Public Utilities Commission, available online at <https://puc.vermont.gov/>. The address for the Public Utilities Commission is 112 State Street, Montpelier, Vermont, 05620-2701 (Tel. # 802-828-2358). [10 V.S.A. §§556(c) and 8506]

- (50) All Other Projects – Right to Appeal to Environmental Court: Pursuant to 10 V.S.A. Chapter 220, any appeal of this decision must be filed with the clerk of the Environmental Court within 30 days of the date of the decision. The Notice of Appeal must specify the parties taking the appeal and the statutory provision under which each party claims party status; must designate the act or decision appealed from; must name the Environmental Court; and must be signed by the appellant or their attorney. In addition, the appeal must give the address or location and description of the property, project or facility with which the appeal is concerned and the name of the applicant or any permit involved in the appeal. The appellant must also serve a copy of the Notice of Appeal in accordance with Rule 5(b)(4)(B) of the Vermont Rules for Environmental Court Proceedings. For further information, see the Vermont Rules for Environmental Court Proceedings, available online at www.vermontjudiciary.org. The address for the Environmental Court is 2418 Airport Road, Suite 1, Barre, VT 05641 (Tel. # 802-828-1660). [10 V.S.A. §556(c)]

The Agency's issuance of this Air Pollution Control Permit relies upon the data, judgment, and other information supplied by the Permittee. The Agency makes no assurances that the air contaminant source approved herein will meet performance objectives or vendor guarantees supplied to the source Permittee. It is the sole responsibility of the Permittee to operate the source in accordance with the conditions herein and with all applicable state and federal standards and regulations.

Permit issued and effective this XXth day of MONTH, 2026.

Permit issuance authorized by:
Agency of Natural Resources
Julie S. Moore, Secretary
Department of Environmental Conservation

By: _____

David Ruby, Interim Director
Air Quality & Climate Division

tcm

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