

#AOP-14-034
DEC# SJ91-0001

Operating Permit Expiration Date: March 4,, 2021

State of Vermont
Agency of Natural Resources
Department of Environmental Conservation



Air Quality & Climate Division
Montpelier, Vermont

TITLE V
AIR POLLUTION CONTROL PERMIT
TO CONSTRUCT AND OPERATE

Date Permit Issued: March 4, 2016

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 herein and CCEC is the Permittee for the LFGTE Operation as permitted under #AOP-15-032.

The Facility consists of the Landfill Operation and the LFGTE Operation. 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 waste in 2006. A Phase V expansion and its associated gas volumes are accounted for in this permit herein but the expansion has not yet been approved by the Waste Management Division. 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 of January 12, 2007, and a fifth CAT G3520C engine was installed and began operating on June 22, 2009.

NEWSVT is required to actively collect LFG generated by waste 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 a flare or 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 proposed the installation of an additional landfill gas (LFG) flare, to increase the generation rate of LFG to 5,545 standard cubic feet per minute (scfm) of LFG, and to increase the LFG capture rate to 5,000 scfm of LFG.

CCEC has proposed to increase the carbon monoxide (CO) emission rate from the CAT 3520C engines to 3.5 grams per brake horsepower hour (g/bhp-hr) from the previously permitted 2.75 g/bhp-hr. This increased emission rate results in a significant increase in annual CO emissions, and triggers review as a major modification. As a result of this major modification review, CCEC has proposed to increase the stack heights at the LFGTE Operation.

CCEC has also proposed to install a siloxane removal system (SRS) as part of the LFGTE Operation to remove siloxanes in LFG, and minimize the formation of siliceous deposits in the CAT G3520C engines. Reducing combustion chamber deposits and wear in the engines is anticipated to reduce engine maintenance costs.

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 And 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, and III	1993 - 2006	2,423,504 (34 acres)	2,569,554 / (45 acres)
Landfill Phase IV	2006 - 2020	4,706,259 (45 acres)	7,275,813 / (90 acres)
Landfill Phase V	- 2021	1,943,650 (20 acres)	9,073,413 / (99 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
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
Three (3) Leachate storage tanks	1 x 20,000 gallon each 1 x 30,000 gallon each 1 x 438,000 gallon each	

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; 28' minimum, proposed stack height 34' minimum installed no later than 12/31/2016.
Two (2) Ethylene Glycol Storage Tanks	1,000 gallons each	LFGTE Operation
One (1) Used Oil Tank	2,000 gallons	LFGTE Operation
One (1) Lube Oil Storage Tank	8,000 gallons	LFGTE Operation

LFGTE Operation - Equipment		
Equipment	Rating	Location
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 dessicant 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, flare for destruction of desorbed siloxanes, H ₂ S, and VOCs. Or equivalent devices.	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 and V.

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 so the Land fill area will be 99 acres instead of 110 acres.

⁴ bhp – brake horsepower rated output as specified by the manufacturer. kW - 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 prior testing at the Landfill. The maximum LFG generation rate is predicted to be 5,545 scfm in 2021 based on the LandGEM model ver. 3.02 with values of L₀ of 130 and k of 0.06. LFG capture efficiency is assumed to be 85% over the life of the Landfill.

(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 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-15-032.

(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 5-502 of the *Regulations* and the following "Permit to Operate" approvals pursuant to 10 VSA §556a and Subchapter X of the *Regulations*. Previous permits for the Facility were solely issued to NEWSVT. However, the LFGTE Operation has been incorporated into the permit for the Facility since the December 16, 2004 issuance of #AOP-03-044

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

(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 increase in the allowable CO emissions from the five (5) CAT G3520C engines at the LFGTE Operation is considered a modification to the Facility under the *Regulations* and consequently a Permit to Construct must be obtained. As the Facility includes operations by two Permittees, the individual permits held by each Permittee must be modified in the event of a change at the Facility.

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. Allowable emissions from the Facility in the future are estimated to be greater than ten (10) tpy combined and emissions of carbon monoxide (CO) are estimated to be in excess of the one-hundred (100) tpy threshold for applicability of Title V of the federal Clean Air Act. In addition, pursuant to Title 40 of the *Code of Federal Regulations* ("40 CFR") Subpart WWW - Standards of Performance for Municipal Solid Waste Landfills - Part 60.752(b), the Landfill Operation is considered a Title V source since the design capacity of the Landfill Operation exceeds 2.5 million Mg.

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 Subchapter X of the *Regulations* and Title 40 *Code of Federal Regulations* ("40 CFR") Part 70.

In accordance with 10 VSA §556(e) the Agency has combined the Permit to Construct and the Permit to Operate modification and renewal for this Facility into a combined Permit to Construct and Operate. The allowable emissions for the Facility are summarized below:

Future Allowable Facility Air Contaminant Emissions (tons/year) ¹						
PM/PM ₁₀ /PM _{2.5}	SO ₂	NO _x	CO	VOCs	Total Criteria	HAPs ²
<19.8	<40	76.0	495	<50	>10	>10/25

¹ PM/PM₁₀/PM_{2.5} - particulate matter and particulate matter of 10 micrometers and 2.5 micrometers in size or smaller, respectively; 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. Emissions are based on: (1) the maximum predicted gas generation rate from the Landfill Operation of 5,545 scfm (2) 50% methane in the LFG, (3) 75%-95% gas collection efficiency from the Landfill Operation (4) the worst case emissions scenario of the engines at full load (2,537.5 scfm) with the flares consuming the remaining (2,462.5 scfm) and (5) PM, NO_x and CO based on manufacturer data, VOCs emissions based on NMOCs in LFG that are 39% VOCs and 98% destruction of the collected NMOCs/VOCs and the estimated formation of aldehydes in the CAT 3520C engines as a combustion by-product, SO₂ based on TRS 400 ppm TRS, which is anticipated to be a conservative measure of TRS in LFG at the Facility.

² Emission of an individual HAP (formaldehyde) from the CAT 3520C engines is estimated as >10 tpy and emissions of total HAPs from the Facility are estimated at >25 tpy.

(E) REVIEW FOR THE PERMIT TO CONSTRUCT

(a) New Source Review Designation

The Facility, prior to the increase in the allowable CO emissions from the five (5) CAT G3520C engines is designated as a major stationary source of air contaminants since it has allowable emissions of nitrogen oxides (NO_x) and carbon monoxide (CO) 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 result in a significant increase in emissions of CO. Consequently, the proposed modification is designated as a major modification and is subject to the requirements of §5-502 of the *Regulations*.

(b) Most Stringent Emission Rate

Pursuant to §5-502 of the *Regulations*, 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 contaminants 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 modification to alter the CO emission rate limitation is a revision of a previously established MSER emission limit and consequently is subject to review under the MSER requirements in §5-502 of the *Regulations* for the pollutant carbon monoxide (CO).

The Agency has re-evaluated the prior MSER for CO and revised the emissions limit contained in the MSER. Operating experience at this and other landfills across the country has shown that LFG contains siloxane compounds derived from consumer products in the refuse. The combustion of siloxanes results in cement-like deposits on internal engine components, interfering with combustion chamber geometry, and resulting in increasing CO emissions over time. While these deposits can be removed from the engine on a periodic basis by removing the cylinder heads and grinding out the deposits, CO emissions are anticipated to continuously increase between these cleanings. The engine manufacturer recommends annual removal of these deposits from the engine components followed by a more extensive on-site in-frame cleaning every three years and an even more extensive off-site overhaul every 6 years. Carbon monoxide emissions between annual cleanings are anticipated to remain below a maximum of 3.5 g/bhp-hr. The standard annual cleaning is expected to reduce carbon monoxide emissions to 3.1 g/bhp-hr or less but it is not until the 6 year cleaning that emissions

are anticipated to reliably achieve compliance with the like new 2.75 g/bhp-hr emission limit for CO. Therefore, this permit amendment is revising the MSER for CO to 3.5 g/bhp-hr to apply at all times with additional emission limits of 3.1 g/bhp-hr to be demonstrated by a compliance test at least once every two years and 2.75 g/bhp-hr to be demonstrated by a compliance test at least once every six years

The NOx emissions from the Facility did not increase by a significant amount under #AOP-06-060 or under this Permit herein, therefore NOx emissions are not subject to re-evaluation at this time and the prior NOx MSER established under #AOP-03-044 remains in effect.

The PM emissions for the Facility are greater than originally estimated in the previous permits, based on the results of PM emissions testing of the engines at the Facility in 2012. The increase in PM emissions from the Facility, based on revised PM emission factors for the engines, will be limited to less than 10 tons per year for PM, so that the increase in PM emissions will not exceed the 10 ton per year significance level for PM_{2.5}. With this limitation, PM emissions are not subject to an MSER evaluation at this time.

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.		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	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

The Agency's implementation procedures concerning the need for an AQIE under §5-406(1) of the *Regulations*, specifies that such analyses may be required when a project results in an allowable emissions increase of ten (10) tons per year or more of any air contaminant, excluding VOCs. Additionally, the Agency may require an AQIE where the short-term allowable emission rates will significantly increase as a result of a project.

Based on the proposed level of emissions increase from this Facility, the Agency required a revised AQIE for the pollutants CO, NO_x, PM/PM₁₀/PM_{2.5} and SO₂. Since CO emission increases also exceed the significance threshold of fifty (50) tons per year, the Agency's implementation procedures require the AQIE to determine which other nearby sources, if any, must be included in the analysis. 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 from the two potential operating scenarios: (1) all the gas being burned in the flares, or (2) the engines burning the maximum amount of gas they are capable of with 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.

NAAQS Review – #AOP-14-034						
Pollutant	Averaging Period	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Sum ($\mu\text{g}/\text{m}^3$)	AAQS ($\mu\text{g}/\text{m}^3$)	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						
Pollutant	Averaging Period	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Maximum Allowable Class II PSD Increment Standard ($\mu\text{g}/\text{m}^3$)	Previously Consumed Class II PSD Increment ($\mu\text{g}/\text{m}^3$)	Class II PSD Increment Available ($\mu\text{g}/\text{m}^3$)	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

(F) REVIEW FOR THE PERMIT TO OPERATE

(a) 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 Air Pollution Control Regulations:*

Applicable Requirements from the 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(1) and (2) – Prohibition of Nuisance and Odor.
Section 5-253.14 - Control of Volatile Organic Compounds from Solvent Metal Cleaning.
Section 5-261(2) – Control of Hazardous Air Contaminants - Hazardous Most Stringent Emission Rate.
Section 5-271 – Control of Air Contaminants from Stationary Reciprocating Internal Combustion Engines.
Section 5-402 – Written Reports When Requested.
Section 5-403 – Circumvention.
Subchapter VIII – Registration of Air Contaminant Sources.
Subchapter X – Operating Permits.

(ii) Reasonably Available Control Technology - §5-1010 of the *Regulations*

Pursuant to 10 VSA §556a(d) and §5-1010 of the *Regulations* the Agency may establish and include within any Permit to Operate emission control requirements based on Reasonably Available Control Technology ("RACT"). Based on the Facility's existing levels of emissions and emission controls, the Agency has not imposed any further requirements on this Facility under this authority at this time.

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

The Facility currently operates under the confines of a Permit to Construct and Operate issued on June 24, 2008 (#AOP-06-060). The conditions within that existing permit applicable to the Landfill Operation are considered applicable requirements pursuant to §5-1002 of the *Regulations*. The requirements of that permit which are not being modified herein are incorporated into this new combined Permit to Construct and Operate (#AOP-14-034).

(iv) Federal Requirements:

Federal Regulations and Clean Air Act Requirements Applicable to the Facility
<p>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 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 50 Mg/year.</p> <p><i>The Facility is subject to this regulation. The Landfill Operation has an existing design capacity (unlined through Phases IV) of 7,275,813 Mg and Phase V will add an additional capacity of 1,943,650 Mg. Uncontrolled NMOC emissions were predicted to first exceed 50 Mg in the year 2001.</i></p>
<p>40 CFR Part 60 Subpart Cc – Emission Guidelines for Municipal Solid Waste Landfills. Applies to existing landfills 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.</p> <p><i>This regulation is not applicable to the Facility. The Landfill Operation was modified subsequent to May 30, 1991 to increase its capacity, thus becoming subject to 40 CFR Part 60 Subpart WWW.</i></p>

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

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 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).

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 installed as part of the LFGTE Operation at the Facility in March 2005 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 on 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 WWW 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.

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. Compliance will be addressed by complying with the provisions of 40 CFR Part 60 Subpart WWW.

**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, and is rated at approximately 140 hp. This engine is considered an existing emergency-use only stationary RICE < 500 hp, and must install an elapsed hour meter, and is subject to maintenance requirements including changing oil & filter and, inspecting and replacing, if necessary, air filter, hoses and belts.

**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 Permittee has stated that the Facility does not store more than the threshold quantity of a regulated substance and thus is 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 Trane RTAA 125-ton rotary chiller at the Facility.

**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 requested a permit shield with respect to several potentially applicable requirements. The Agency has reviewed this request and is hereby granting a permit shield in accordance with §5-1015(a)(14) of the *Regulations* for the following requirements which have been determined not to be applicable to the Facility based on the information provided by the Permittee:

Non-Applicable Requirements for which a Permit Shield is Granted

§5-231(1) - Prohibition of Particulate Matter: Industrial Process Emissions. The Agency has determined that the combustion of LFG is not considered an industrial process since gaseous fuels are not considered part of the *process weight* input into a process. Therefore, the combustion of LFG is not subject to this regulation.

§5-231(3) - Prohibition of Particulate Matter: Combustion Contaminants. The Agency has determined that LFG is not a *fossil fuel* under the definition in the *Regulations* therefore this regulation is not applicable to the John Zink, and Parnel Biogas Landfill Operation flares, the SRS flare, or engines that combust LFG. However, the other fuel burning equipment at the facility including the No.2 fuel oil space heating units, the used oil furnace, and the backup generator at the LFGTE Operation are subject.

Non-Applicable Requirements for which a Permit Shield is Granted

§5-241(3) - Prohibition of Nuisance and Odor: Control of Odors from Industrial Processes. While the Facility is subject to §5-241(1) and (2), the Agency has not previously classified all landfills as industrial processes subject to §5-241(3) and does not currently consider the Facility subject to this regulation. This regulation may become applicable at any point in the future upon a determination by the Air Pollution Control Officer that operations at the site are an odiferous process per se. In addition, in order to ensure compliance with other applicable requirements for this Facility, most of these emission control measures are required under separate authority.

(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 this Permit to certify compliance as part of their 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 this Permit.

(G) HAZARDOUS MOST STRINGENT EMISSION RATE

Pursuant to §5-261 of the *Regulations*, any stationary source subject to the rule¹ 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

¹ 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 subjects to the requirements of §5-261.

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 HMSER 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 (525 ppm) and again in 2002 (561 ppm). Based on these results, the Facility is still anticipated to have emissions of several HACs in excess of their respective Action Level if allowed to vent uncontrolled and therefore the Facility is subject to HMSER 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. Based on this information, the Agency has determined that HMSER shall continue to 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 HMSER 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 requirements 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.

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.

Formaldehyde is formed and emitted from the CAT 3520C engines at the Facility as a result of incomplete combustion of LFG, and these formaldehyde emissions are anticipated to exceed the AL. Formaldehyde 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 proposed for treating 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 control in the future when there is a better understanding of the long-term performance of oxidative catalysts on LFG-fired engines.

Accordingly, at this time, the Agency has determined that management of formaldehyde 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 (SiO₂ 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 proposed to install a siloxane removal system to remove 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 19.8 ton per year limit on total PM emissions from the Facility.

These HMSER evaluations shall be subject to re-evaluation five (5) years from the date of its determination and shall remain in effect until revised by the Agency. These and 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	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 (H ₂ S) Combustion byproducts: formaldehyde acetaldehyde silica (SiO ₂)	<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 ppmvd ¹ (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 H ₂ S. 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 19.8 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.

As the Agency has determined that the Facility will have emissions of NMOCs, hydrogen sulfide, formaldehyde, acetaldehyde, and silica in excess of their respective Action Level, the Agency has considered whether or not an Air Quality Impact Evaluation should be required. The Agency has reviewed several factors relating to this Facility, including, but not limited to those listed in §5-261(3)(a)-(c) of the *Regulations* and the level of emissions typical for this category of emission source. Based on this review, the Agency is not requiring the Facility to conduct an air quality impact evaluation pursuant to §5-261(3) of the *Regulations* at this time.

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 Landfill Operation in accordance with the plans and specifications submitted to the Agency and in accordance with the conditions set forth herein, including the Landfill Operation equipment specifications as listed in Findings of Fact (A) or their equivalent as approved by the Agency.

Construction and operation of the LFGTE Operation as listed in Findings of Fact (A) is permitted separately under #AOP-15-032. [10 V.S.A. §§556(c) and 556a(d)] [§5-501(1) of the *Regulations*] [Applications for #AP-92-020, AP-92-020a, AOP-03-044, AOP-06-060, and AOP-14-034]

- (2) In accordance with this Permit and 40 *CFR* Part 60 Subpart WWW (Standards of Performance for Municipal Solid Waste Landfills) and 40 *CFR* Part 63 Subpart AAAA (National Emission Standards for Hazardous Air Pollutants: Municipal solid Waste Landfills), the Permittee shall install, operate and maintain a LFG collection and control system that effectively captures the gas generated within the Landfill Operation and routes the gas to a control device that effectively destroys the nonmethane organic compounds (NMOCs) within the gas, in accordance with 40 *CFR* Part 60 Subpart WWW. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart WWW and 40 *CFR* Part 63 Subpart AAAA]

LFG Collection System Requirements

- (3) The LFG collection system shall be designed, constructed and operated in accordance with the requirements of 40 *CFR* §60.759 which includes but is not limited to the following:
- (a) The LFG collection system and individual wells shall be designed to achieve comprehensive control of the LFG taking into account: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integrations with closure end use, air intrusion control, corrosion resistance, fill settlement, temperature resistance.
 - (b) There shall be a sufficient density of LFG collection wells to ensure comprehensive and effective collection of LFG.
 - (c) The system shall control LFG from all gas producing areas of the Landfill Operation except as otherwise approved by the Agency.
 - (d) The LFG collection system shall be designed so as not to allow indirect short circuiting of air under the cover or refuse into the gas collection system or LFG into

the ambient air. Any gravel or other materials used around pipe perforations shall be of sufficient dimension so as not to penetrate or block the perforations.

- (e) The LFG collection system components shall be constructed of PVC, HDPE, fiberglass, stainless steel or other nonporous corrosion resistant materials.
- (f) The individual LFG collection wells shall be connected to the header pipes with a control valve and shall be equipped with a gas sampling port.
- (g) The gas mover system shall be designed to handle the maximum LFG collection flow rate expected over the life of the system.

[10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 CFR Part 60 Subpart WWW §60.759]

- (4) In accordance with the requirements of 40 *CFR* §60.753(a), the Permittee shall ensure the gas collection system collects gas from all areas of the Landfill Operation where refuse has been in place for five (5) years or more and from all closed areas of the Landfill Operation as well as areas at final grade, where refuse has been in place for two (2) years or more. In addition, the gas collection system must be extended into any area of the Landfill Operation that is considered a bioreactor as defined in 40 *CFR* Part 63 Subpart AAAA prior to initiating addition of liquids other than leachate. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart WWW §60.753(a)] [40 *CFR* Part 63 Subpart AAAA §63.1955(d)]

- (5) In accordance with the requirements of 40 *CFR* §60.753(b), the Permittee shall ensure the gas collection system maintains a negative pressure at each vertical gas well extraction point except in cases where it is documented that well temperatures or oxygen have increased and must be reduced to avoid the risk of a fire. In addition, the requirement to maintain a negative pressure at each well head does not apply to the gas collection wells in the unlined areas of the Landfill Operation while that separate gas collection system is operated in a passive gas collection mode.

The Permittee shall at a minimum monitor and record the gauge pressure at each active gas collection system well head monthly. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart WWW §60.753(b)]

- (6) In accordance with the requirements of 40 *CFR* §60.753(c), the Permittee shall ensure the gas collection system maintains at each vertical gas well extraction point a LFG temperature below 131°F (55°C) with either a nitrogen level of less than twenty (20) percent by volume or an oxygen level less than five (5) percent by volume.

The Permittee shall at a minimum monitor and record the temperature and either the nitrogen level or oxygen level at each well head monthly. The nitrogen level shall be determined in accordance with 40 *CFR* Part 60, Appendix A, Reference Method 3C or an equivalent method approved in writing by the Agency. The oxygen level shall be determined in accordance with 40 *CFR* Part 60, Appendix A, Reference Method 3A, except as provided in 40 *CFR* §60.753(c)(2), or an equivalent method approved in writing by the Agency. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart WWW §60.753(c)]

- (7) In accordance with the requirements of 40 *CFR* §60.753(d), the Permittee shall ensure the gas collection system is operated in such a manner that the methane concentration is maintained at less than 500 ppm above background at the surface of the Landfill Operation. The Permittee shall develop a surface monitoring design plan that includes the monitoring procedures to be followed per 40 *CFR* §60.755(c) and (d), as well as a topographical map with the proposed monitoring route. Prior to closure of the Landfill Operation, at a minimum the methane concentrations shall be monitored quarterly along the entire perimeter of the collection area and along a pattern that traverses the capped areas of the Landfill Operation at 30 meter intervals and where visual observations indicate elevated concentrations of LFG, such as distressed vegetation and cracks or seeps in the cover. Upon closure of the Landfill Operation, the Permittee may skip to annual monitoring along the entire perimeter of the collection area and along a pattern that traverses the capped areas of the Landfill Operation at 30 meter intervals provided there are no monitored exceedances of the surface methane limit and no areas where visual observations indicate elevated levels for three consecutive quarters. Any subsequent monitored exceedance of the surface methane limit shall return the monitoring frequency for the entire Landfill Operation back to quarterly. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart WWW §60.753(d)]
- (8) The gas collection and control system shall not be equipped with any LFG bypass system that would enable the collected LFG to be sent to the ambient air without first passing through the control system(s) without the prior written approval of the Agency. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart WWW §60.756(b)]

LFG Control System Requirements

- (9) In accordance with the requirements of 40 *CFR* §60.753(e), the Permittee shall ensure that all LFG collected by the gas collection system is routed to a LFG control system consisting of either (1) an open flare or flares designed and operated in accordance with 40 *CFR* §60.18, (2) a control system designed and operated to reduce NMOC by 98 weight percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen, or (3) a treatment system that processes the collected gas for subsequent sale or use. The existing treatment system at the LFGTE Operation consisting of LFG dewatering, filtration, chilling and compression before combustion meets the definition of a “treatment system” in accordance with §60.752(b)(2)(iii).

In the event the engines are off-line for any reason, the flare or flares shall have the capacity to combust the entire amount of LFG collected while still complying with all the requirements of 40 *CFR* §60.18 including operation with no visible emissions and the limitations on gas exit velocity. The Permittee shall at no time allow the venting of LFG from the gas collection system that is not properly routed to one of the LFG control systems without the approval of the Agency. In the event more LFG is collected than can be accommodated in the LFG control systems the Permittee shall within one (1) hour shut down the gas mover system and close all valves in the collection and control system contributing to the venting of the gas to the atmosphere. The Permittee shall also immediately make arrangements to bring the necessary gas control system capacity on-line. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart WWW §60.753(e)] [EPA Applicability Determination 1000002 – EPA Region 1, September 30, 2009]

- (10) In accordance with the requirements of 40 *CFR* §60.753(f), the Permittee shall ensure that all LFG collected by the gas collection system is at all times routed to one of the properly operating control systems, as specified above. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart WWW §60.753(f)]
- (11) Each Landfill Operation flare, including the John Zink flare, Parnell Biogas flare, and the passive flares operated as part of the unlined area of the Landfill Operation shall be operated with a flame present at all times LFG is routed through the flare. In addition, the flares shall be equipped with a windscreen to prevent flame out if necessary. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart A §60.18(c)(2)]

- (12) Each Landfill Operation flare, including the John Zink and Parnell Biogas flares, shall be equipped with a heat sensing device, or the equivalent as approved by the Agency, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame when LFG is being delivered to the respective flare. The device shall be installed, calibrated, maintained and operated in accordance with the manufacturer's specifications. In the event the heat sensing device detects a flame failure the gas flow to the flare shall be automatically shut down until the flame is reestablished. Passive flares operated as part of any separate gas collection and control system for the unlined area of the Landfill Operation shall not be subject to this condition. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 CFR Part 60 Subpart WWW §60.756(c)] [40 CFR Part 60 Subpart A §60.18(f)(2)] [40 CFR Part 64]
- (13) Each passive flare operated as part of any separate gas collection and control system for the unlined area of the Landfill Operation shall be equipped either with a pilot light and heat sensing device as required in the prior condition above or a continuous sparking plug or plugs to effectively maintain a flame at the flare. The Permittee shall routinely inspect and maintain the spark arrestors for said flares, the spark plugs and any batteries or solar panels necessary for the proper operation of the plugs, in accordance with the manufacturer's recommendations. This shall include but not be limited to ensuring the plugs are properly sparking, the batteries are adequately charged and the solar panels are clean and properly aligned. The Permittee shall also maintain a sufficient supply of routine replacement parts for said flares such as spark plugs and batteries so as to minimize maintenance and repair downtimes. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*]
- (14) In accordance with the requirements of 40 CFR §60.752(b)(2)(v), the Permittee shall ensure the gas collection and control system is operated and maintained for a minimum of 15 years and shall not be discontinued until the Permittee has demonstrated the Facility will comply with 40 CFR §60.752(b)(2)(v), the applicable portions of §5-261 of the *Regulations*, and has obtained the prior written approval of the Agency. [10 V.S.A. §§556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 CFR Part 60 Subpart WWW §60.752(b)(2)(v)] [40 CFR Part 60 Subpart A §60.18(f)(2)]
- (15) Prior to relocation of any waste from the unlined areas of the Landfill Operation, the Permittee shall submit an odor control plan for approval by the Agency and shall also obtain any necessary variance(s) and Solid Waste Certifications. No relocation of waste shall occur until the Agency has issued all written approvals. [10 V.S.A. §§556(c) and 556a(d)] [§5-405(1) and 5-1015(a) (1), (3) and (4) of the *Regulations*]

Other Equipment Requirements

- (16) Stack heights [Landfill Operation Flares]: Except those flares used exclusively for the unlined area of the Landfill Operation, the exhaust gases from the John Zink and Parnel Biogas flares, shall be vented vertically through separate stacks which extend a minimum of thirty-five (35) feet above the stack base grade elevation.

The stacks shall 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. [10 V.S.A. §§556(c) and 556a(d)] [§5-406 of the *Regulations*] [Application for #AOP-14-034]

- Operational Limitations -

- (17) Sulfur Content in Fuel – LFG: The Permittee shall not sell or permit the use of LFG as fuel for heat or power generation that contains more than 2.0% sulfur by weight. [10 V.S.A. §§556(c) and 556a(d)] [§§5-501 and 5-1015(a)(1) of the *Regulations*] [§5-221(1)(a) of the *Regulations*]
- (18) Sulfur Content in Fuel – No. 2 Fuel Oil and Used Oil: Only No.2 fuel oil, or lighter grade fuel oils, with a maximum sulfur content not to exceed 0.05 percent by weight may be used as fuel in the distillate fuel oil fired space heating furnaces unless the Permittee obtains prior written approval from the Agency to use another type of fuel.

Only used oil conforming to the requirements of Condition (19) of this permit, and with a maximum sulfur content not to exceed 2.0 percent by weight may be used as fuel in the used oil fired space heating furnaces unless the Permittee obtains prior written approval from the Agency to use another type of fuel.

Commencing on July 1, 2018, the sulfur content of No.2 and lighter distillate oils shall not exceed 0.0015 percent by weight, and the sulfur content of used oil shall not exceed 0.5 percent by weight. [10 V.S.A. §§556(c) and 556a(d)] [§§5-501 and 5-1015(a)(1) of the *Regulations*] [§5-221(1)(a) of the *Regulations*] [Application for #AOP-14-034]

(19) Used Oil Combusted as a Fuel:

- (a) The combustion efficiency of any boiler burning used oil, either alone or in combination with any other fuel, shall be ninety-nine (99) % or greater. Combustion efficiency shall be determined using the following equation:

$$CE (\%) = \frac{CO_2}{CO_2 + CO} \times 100$$

Where;

CE = Combustion efficiency,

CO₂ = % by volume of carbon dioxide in the flue gas on a dry basis, and

CO = % by volume of carbon monoxide in the flue gas on a dry basis.

- (b) The Permittee shall comply with all necessary requirements for handling, storage, and disposal of used oil specified in the Vermont Hazardous Waste Management Regulations.
- (c) The Permittee shall only burn used oil which has properties and constituents within the allowable limits set forth in Table A of the *Regulations* as reproduced below:

Table A Used Oil Constituents and Properties (Prior to Blending)	
Constituent/Property	Allowable ¹
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Flash Point	Must be 100 degrees F or more
Total Halogens	1000 ppm maximum
Polychlorinated Biphenyls (PCBs)	< 2 ppm maximum
Net Heat of Combustion	8000 BTU/lb minimum

¹ units of parts per million (ppm) are by weight on a water free basis.

[§5-221(2) of the *Regulations* as amended in 2014]

- (20) Requirements for Landfilling of Regulated Asbestos-Containing Material (RACM): The Permittee shall perform disposal activities involving RACM in compliance with 40 CFR Part 61, Subpart M, §61.154. Requirements of this subpart include but are not limited to:
- (a) The areas of RACM disposal shall be operated with no visible emissions, or the requirements of (c) or (e) of this Condition must be met;
 - (b) Unless a natural barrier adequately deters access by the general public, warning signs and fencing must be installed and maintained in conformance with §61.154(b) or the requirements of (c) of this Condition must be met.
 - (c) at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the RACM that has been deposited at the site during the operating day or previous 24-hour period shall be covered with at least 6 inches of compacted nonasbestos-containing material or;
 - (d) at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the RACM that has been deposited at the site during the operating day or previous 24-hour period shall be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion.
 - (e) Rather than meet the no visible emission requirement of paragraph (a) of this section, use an alternative emissions control method that has received prior written approval by the Agency according to the procedures described in §61.149(c)(2).

[10 V.S.A. §§556(c) and 556a(d)] [§§5-261, 5-501 and 5-1015(a)(1) of the Regulations] [40 CFR Part 61 Subpart M]

- (21) Generators/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 including NSPS Subpart IIII and JJJJ and NESHAP ZZZZ, as may be applicable. All engines, including emergency generators/engines, installed on or after July 1, 2007 must comply with the applicable emission standards (Tier 2) of §5-271 immediately upon installation. Installation of any size engine, even those below 450 bhp, may still require approval from the Agency in the form of an amended permit prior to installation. Stationary reciprocating internal combustion engines include those used to power electric generator sets or to provide shaft power for other equipment such as compressors but does not include engines used to power motor vehicles. [§§5-271 and 5-501 of the *Regulations*] [40 CFR Part 60 Subpart IIII and Part 63 Subpart ZZZZ]

- (22) Solvent Metal Cleaning [Parts Cleaner(s)]: The Permittee shall operate the cold, solvent metal cleaning unit(s) (parts cleaner(s)) in accordance with the following requirements and shall only use a solvent with a vapor pressure equal to or less than 0.3 pounds per square inch measured at 100°F, which includes but is not limited to the Safety-Kleen 105 hydrocarbon solvent. Prior to the Permittee using any solvent with a maximum true vapor pressure greater than 0.3 psi or using a solvent that is heated, the Permittee shall notify the Agency and comply with any additional applicable requirements of §5-253.14 of the *Regulations*.
- (a) Provide a permanent, legible, conspicuous label, summarizing the operating requirements;
 - (b) Store waste solvent in covered containers;
 - (c) Close the cover whenever parts are not being handled in the cleaner;
 - (d) Drain the cleaned parts until dripping ceases;
 - (e) Supply a solvent spray, if used, that ensures a solid fluid stream at a pressure that does not exceed ten (10) pounds per square inch gauge;
 - (f) Degrease only materials that are neither porous nor absorbent; and
 - (g) Cease operation of the unit upon the detection of any visible solvent leak until such solvent leak is repaired.

[10 V.S.A. §§556(c) and 556a(d)] [§5-253.14 of the *Regulations*]

- (23) 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. [§5-202 of the *Regulations*]

- Emission Limitations -

- (24) John Zink and Parnel Biogas Utility Ground Flares: Emissions of the following pollutants from the John Zink and Parnel Biogas utility ground flares shall not exceed the following limits:

Pollutant Emission Limitations				
Pollutant	John Zinc Flare (75 MMBtu/hr)		Parnel Biogas Flare (77.8 MMBtu/hr)	
	lbs/MMBtu ¹	lbs/hour ²	lbs/MMBtu ¹	lbs/hour ²
Carbon monoxide (CO)	0.37	27.8	0.37	28.8
Nitrogen oxides (as NO ₂)	0.068	5.1	0.068	5.3
Nonmethane organic compounds (NMOCs)	98% destruction efficiency or 20 ppmvd ³ as hexane@3% O ₂ outlet concentration			

¹ lbs/MMBTU equals pounds of pollutant emitted per million British Thermal Units of heat input.

² lbs/hour equals pounds of pollutant emitted per hour based on the stated heat input rating for each flare, LFG containing 50% methane and the nominal rated capacity of the flare approximately 2,500 scfm.

³ ppmvd equals parts per million by volume on a dry basis corrected to three (3) % oxygen.

Any emission testing conducted to demonstrate compliance with the above emission limit shall be performed in accordance with 40 *CFR* Part 60, Appendix A, Reference Method 10 for CO and Method 7E for NO_x or an alternative method which has been published in 40 *CFR*, provided the federally approved alternative method has been accepted in writing by the Agency before testing. Open utility flares typically are not subject to stack emission testing due to the inherent limitations in the design of such flares and instead are required to comply with the visible emissions and gas velocity design criteria of 40 *CFR* Part 60.18. [10 V.S.A. §§556(c) and 556a(d)] [§S5-404 and 5-502(3) of the *Regulations*] [Application for #AOP-14-034]

- (25) 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

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

Where:

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

$\text{Concentration}_{\text{H}_2\text{S}}$ = 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) and 556a(d)]

- (26) 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 19.8 tons per rolling 12-month period. Monthly PM emissions shall be calculated in accordance with the following formulae:

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

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

Where:

$\text{LFG}_{\text{treated}}$ = Total collected LFG flow in scf treated by the SRS at the Facility in that month

$\text{Si Concentration}_{\text{srs inlet}}$ = Si concentration in LFG before treatment by the SRS in mg Si / cubic meter

$\text{Si Concentration}_{\text{srs outlet}}$ = 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.

$\text{Flare Emission Factor}$ = 1.7E-2 lb/MMBtu

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

Where:

$\text{LFG}_{\text{month flares}}$ = 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.

$\text{Flare Emission Factor}$ = 1.7E-2 lb/MMBtu

$\text{Si Concentration}_{\text{flares}}$ = Si concentration in LFG to flare(s) in mg Si / cubic meter

$\text{Molecular weight of Si}$ = 28.09

$\text{Molecular weight of SiO}_2$ = 60.08

$$\text{Equation 4: } PM_{\text{engine combustion}} = [\text{Engine Emission Factor}] * [1 \text{ lb}/453,592 \text{ g}] * [\text{Hours of operation for 3520C engines}] * [3520 \text{C engine rating}] * [\text{Capacity Factor}] * [1 \text{ ton}/2,000 \text{ lb}]$$

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 every six (6) months.
- 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 every six (6) months using sample collection and chemical analytical methods approved by the Agency. Sampling and analysis of untreated LFG for Si shall commence within 90 days of permit issuance, and sampling and analysis of LFG treated by the SRS for Si shall be 90 days after completion of SRS installation. [10 V.S.A. §§556(c) and 556a(d)]

- (27) 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:

$$\text{Equation 1: } \text{VOC}_{\text{total}} = \text{VOC}_{\text{fugitive}} + \text{VOC}_{\text{flares}} + \text{VOC}_{\text{engine combustion}}$$

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

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

Where:

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

$\text{LFG}_{\text{fugitive}}$ = 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)

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

Where:

Destruction Efficiency = 0.98

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

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

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 (25) of #AOP-15-032 in grams per brake horsepower-hour plus the AP-42 formaldehyde emission factor for natural-gas fired engines of 0.164 grams per bhp-hr.

OR, at the Agency's discretion,

VOC Emission Factor = Measured emission factor obtained from stack testing performed as required by Condition (26) of #AOP-15-032.

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) and 556a(d)]

- (28) Particulate Matter: Emissions of particulate matter ("PM") from any fossil fuel burning device, except motorized vehicles, with a heat input rating of less than ten (10) million British Thermal Units per hour ("MMBTU/hr") shall not exceed 0.5 pounds per MMBtu.

Any emission testing conducted to demonstrate compliance with the above emission limit shall be performed in accordance with 40 *CFR* Part 60, Appendix A, Reference Method 5 and 202 or an alternative method which has been published in 40 *CFR*, provided the federally approved alternative method has been accepted in writing by the Agency before testing. [§§5-231(3)(a)(i) and 5-404 of the *Regulations*]

- (29) Visible Emissions [Landfill Operation]: Emissions of visible air contaminants from any installation at the Landfill Operation, 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. [§§5-211(2), 5-211(3) and 5-404 of the *Regulations*]

- (30) Visible Emissions [Landfill Operation Flares]: The John Zink and Parnel Biogas flares, and the passive flares located in the unlined area of the Landfill Operation, which are used for the combustion of LFG at the Facility, shall be operated with no visible emissions in accordance with 40 *CFR* §60.18(c)(1). [10 V.S.A. §556(c) and 556a(d)] [§5-261(2) of the *Regulations*] [40 *CFR* Part 60 Subpart A §60.18(c)(1)]

- (31) 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*. [§5-261 of the *Regulations*]

- (32) 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. This shall include but not be limited to the following:

- (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.

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

- (33) Nuisance and Odor: The Permittee shall not discharge, cause, suffer, allow, or permit from any activity at the Landfill Operation whatsoever such quantities of air contaminants or other material 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. The Permittee shall not discharge, cause, suffer, allow, or permit any emissions of objectionable odors beyond the property line of the premises. [§5-241(1) and (2) of the *Regulations*]

- Compliance Testing and Monitoring -

- (34) LFG Collection and Control System Design and Operation Plan: The Permittee shall develop and implement a LFG collection and control system design and operation plan that addresses the construction design and operational requirements of this Permit within one-hundred eighty (180) days after the issuance of this Permit. Said Plan was developed and submitted to the Agency in October 2003. The purpose of said plan shall be to ensure that the design and operation of the LFG collection and control system remains in continuous compliance with the conditions of this Permit. The design plan shall include the details of the LFG collection and control system including a map of the collection system layout and the detailed design drawings of the collection and control systems. The plan shall also include provisions for the operations, monitoring, inspections and maintenance of the gas collection and control systems. Said 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 this plan at the Agency's request or on its own motion to reflect equipment or operational changes as well as the required expansions of the collection and control system over time. [10 V.S.A. §§556(c) and 556a(d)] [§5-405(1) of the *Regulations*]
- (35) Landfill Operation Surface Monitoring Design Plan: NEWSVT shall develop and implement a Landfill Operation surface monitoring design plan in accordance with Condition (7) of this Permit. Said Plan was developed and submitted to the Agency in October 2003. Said 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 this plan at the Agency's request or on its own motion to reflect equipment or operational changes as well as any expansion of the Landfill Operation surface over time. [10 V.S.A. §§556(c) and 556a(d)] [§§5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]
- (36) Startups, Shutdowns and Malfunctions (SSM) Plan – Landfill Operation: The Permittee shall develop and implement a written startup, shutdown and malfunction (SSM) Plan in accordance with 40 CFR Part 63 Subpart A §63.6(e)(3). Said Plan was developed and submitted to the Agency previously and revised on February 26, 2007.

The Permittee shall submit a semi-annual SSM report to the Agency that details all actions taken during periods of startup, shutdown and malfunctions. The Permittee shall also report all actions taken during periods of startup, shutdown and malfunctions that are not consistent with the SSM Plan within two (2) working days of such action followed by a written letter to the Agency within seven (7) day of such action. [10 V.S.A. §§556(c) and 556a(d)] [40 CFR Part 63 Subpart A §63.6(e)(3)]

- Record Keeping and Reporting -

- (37) Records of Gas Collection System Well Head Inspections and Monitoring: The Permittee shall maintain records of all monitoring of the individual LFG collection well heads for gauge pressure, temperature and either the nitrogen level or the oxygen level in accordance with the Conditions of this Permit as well as any maintenance, adjustments or other actions taken at each well head. [10 V.S.A. §§556(c) and 556a(d)] [§§5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]
- (38) Records of Landfill Operation - Surface Monitoring: The Permittee shall maintain records of the results of all Landfill Operation surface monitoring of methane levels completed in accordance with this Permit and any actions taken. [10 V.S.A. §§556(c) and 556a(d)] [§§5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]
- (39) Records of Landfill Operation - Flare Operating Status: The Permittee shall maintain records of the operating status of each Landfill Operation flare, including the John Zink, Parnel Biogas, and passive flares on the unlined area of the Landfill Operation for all periods of operation and shall include the level of operation such as the quantity of LFG, in standard cubic feet or Btu per hour, delivered to the flares. [10 V.S.A. §§556(c) and 556a(d)] [§§5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]
- (40) Records of Landfill Operation Flare Inspections and Maintenance: The Permittee shall maintain records of all maintenance and repairs completed on the Landfill Operation flares, including the John Zink and, Parnel Biogas flares, and the passive flares on the unlined area of the Landfill Operation. [10 V.S.A. §§556(c) and 556a(d)] [§§5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]
- (41) Records and Reporting for Landfilling of RACM: The Permittee shall maintain records and perform reporting of landfilling activities involving RACM in compliance with 40 CFR Part 61, Subpart M, §61.154. Requirements of this subpart include but are not limited to:
- (a) Maintain waste shipment records and perform appropriate notifications in compliance with §61.149(e). These records shall be maintained for a period of two (2) years.
 - (b) Maintain, until closure, records of the location, depth and area, and quantity in cubic yards of RACM within the disposal site on a map or diagram of the disposal area;
 - (c) Notify the Agency in writing at least 45 days prior to excavating or otherwise disturbing any RACM that has been deposited at a waste disposal site and is covered, and comply with the requirements of §61.149(j).
 - (d) Upon closure of the facility, comply with all of the provisions of §61.151, and submit copies of records of RACM quantities and disposal locations in compliance with §61.149(h).

[10 V.S.A. §§556(c) and 556a(d)] [§§5-402 and 5-1015(a)(6) of the *Regulations*] [40 CFR Part 61 Subpart M]

- (42) Records of Distillate No. 2 Fuel Use and Used Oil Fuel Use: The Permittee shall maintain records of the total quantity of distillate No. 2 fuel oil consumed in the Facility furnaces as well as the quantity of used oil consumed in the used oil furnace, in gallons, each calendar year. [10 V.S.A. §§556(c) and 556a(d)] [§§5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]
- (43) Records of Fuel Oil Certifications [No. 2 Distillate Oil]: The Permittee shall obtain from the fuel supplier, for each shipment of fuel oil received at the Facility for use in stationary combustion equipment, a certification or invoice regarding the sulfur content of the fuel oil. The certification or invoice shall include: the date of delivery, name of the fuel oil supplier, fuel type, quantity of fuel oil delivered, the sulfur content of the fuel delivered, and the location of the oil when the sample was drawn for analysis to determine the sulfur content of the oil, specifically including whether the oil was sampled as delivered to the affected facility, or whether the sample was drawn from oil in storage at the oil supplier's or oil refiner's facility, or other location, and the method used to determine the sulfur content of the oil. [10 V.S.A. §§556(c) and 556a(d)] [§5-405(1) of the *Regulations*]
- (44) Records of Used Oil Analyses: The Permittee shall maintain records of any and all analyses of the used oils generated at the Facility or accepted at the Facility for combustion in the used oil furnace. [10 V.S.A. §§556(c) and 556a(d)] [§§5-221(2), 5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]
- (45) Records of LFG flow and H₂S Measurements: The Permittee shall maintain records of LFG flow measurements and associated H₂S concentration measurements used to demonstrate compliance with the requirements of Condition (25) of this permit. [10 V.S.A. §§556(c) and 556a(d)] [§§5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]
- (46) Records of LFG flow and Si Concentration Measurements: The Permittee shall maintain records of LFG flow measurements and associated Si concentration measurements used to demonstrate compliance with the requirements of Condition (26) of this permit. [10 V.S.A. §§556(c) and 556a(d)] [§§5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]
- (47) 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.
- [§§5-402, 5-405(1) and 5-1015(5) of the *Regulations*] [40 CFR Part 70.6(a)(3)(ii)(A)]
- (48) 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. [§§5-402, 5-405(1) and 5-1015(a)(7) of the *Regulations*] 40 CFR Part 70.6(a)(3)(ii)(B)]

- (49) **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. [§§5-402 and 5-1015(a)(6) of the *Regulations*]
- (50) **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, but is not limited to, 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*]
- (51) **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 NEWSVT 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 controls devices;
 - (b) all periods when the collection system was not operating in excess of 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.

[§§5-402, 5-405(1) and 5-1015(a)(5) of the *Regulations*][40 CFR Part 70 §70.6(a)(3)(iii)(A)]

- (52) Reporting: Annual Compliance Certification: By February 1st of each year, the Permittee shall submit to the Agency and the U.S. EPA an annual certification of compliance for the previous calendar year which ascertains and identifies the compliance status of the Facility with respect to all terms and conditions of this Permit, including but not limited to the following:
- (a) Identification of each term or condition of the permit that is the basis of the certification;
 - (b) The compliance status;
 - (c) Whether compliance was continuous or intermittent; and
 - (d) The methods used for determining the compliance status of the Facility over the reporting period.

[§114(a)(3) of the CAA] [§§5-402 and 5-1015(a)(11) of the *Regulations*]

- (53) Notification of Closure: The Permittee shall notify the Agency of permanent closure of the Landfill Operation within thirty (30) days of waste acceptance cessation. [10 V.S.A. §§556(c) and 556a(d)] [§5-402(1) and §5-1015(a)(5) of the *Regulations*] [40 CFR Part 60 Subpart WWW §60.757(d)]
- (54) Annual Registration: The Permittee shall calculate the quantity of emissions of air contaminants from the Landfill Operation annually. If the Facility emits more than five (5) tons of any and all air contaminants per year, 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. [Subchapter VIII §§5-802, 5-803, 5-807, 5-808 of the *Regulations*]
- (55) All records, notifications and reports that are required to be submitted to the Agency by this Permit shall be submitted to:

Agency of Natural Resources
Department of Environmental Conservation
Air Quality & Climate Division
One National Life Drive, Davis Building, Second Floor
Montpelier, Vermont 05620-3802

[§5-402 of the *Regulations*]

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

Air Compliance Clerk
U.S. EPA-New England
5 Post Office Sq. Suite 100 (OES04-2)
Boston, MA 02109-3912

[§5-402 of the *Regulations*]

- Permit Shield -

- (57) In accordance with §5-1015(a)(14) of the *Regulations*, the Facility is granted a "permit shield" and is not subject to the regulations and standards listed in Finding of Fact (F)(b) of this Permit. The Agency's "permit shield" determination is based upon the information submitted by the Permittee in their application. The "permit shield" shall be binding only with respect to activities disclosed in the Permittee's application. [§5-1015(a)(14) of the *Regulations*]

- Stratospheric Ozone Protection -

- (58) Protection of Stratospheric Ozone - Recycling and Emissions Reduction. The Permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 *CFR* Part 82, Subpart F:
- (a) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices specified in 40 *CFR* Part 82, Subpart F §82.156.
 - (b) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment as specified in 40 *CFR* Part 82, Subpart F §82.158.
 - (c) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program as specified in 40 *CFR* Part 82, Subpart F §82.161.
 - (d) Commercial or industrial process refrigeration equipment must comply with the leak repair requirements specified in 40 *CFR* Part 82, Subpart F §82.156.
 - (e) For each appliance normally containing fifty (50) or more pounds of refrigerant, the Permittee shall keep records of refrigerant purchased and added to such appliances as specified in 40 *CFR* Part 82, Subpart F §82.166.

[40 *CFR* Part 82, Subpart F]

- Standard Permit Conditions -

- (59) 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 556a(d)] [40 CFR Part 60.11(d) and 63.6(e)]
- (60) 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*]
- (61) 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. §§556(d) and 556a(g)] [§§5-1008(a) and 5-1008(e) of the *Regulations*]

- (62) Cause for reopening, modification, termination and revocation of this Permit includes, but is not limited to:
- (a) Inclusion of additional applicable requirements pursuant to state or federal law;
 - (b) A determination that the permit contains a material mistake or that inaccurate information was used to establish emissions standards or other terms or conditions of the operating permit;
 - (c) A determination that the operating permit must be modified or revoked to ensure compliance with applicable requirements;
 - (d) A determination that the subject source has failed to comply with a permit condition;
 - (e) For Title V subject sources, a determination by U.S. EPA that cause exists to terminate, modify, revoke or reissue an operating permit;
 - (f) Those causes which are stated as grounds for refusal to issue, renew or modify an operating permit under §5-1008(a) of the *Regulations*; or
 - (g) If more than three (3) years remain in the permit term and the source becomes subject to a new applicable requirement.
- [§5-1008(e)(4) of the *Regulations*]
- (63) 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) and 556a(d)] [§5-402 of the *Regulations*] [40 CFR Part 70 §70.6(a)(6)(v)]
- (64) 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), 556a(d) and 557] [§§5-402, 5-404, and 5-1015(a)(10) of the *Regulations*]
- (65) 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) and 556a(d)] [§§5-505 and 5-1006(f) of the *Regulations*]
- (66) 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) and 556a(d)]

- (67) 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) and 556a(d)] [§§5-1008(a) and 5-1008(e) of the *Regulations*]
- (68) 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) and 556a(d)]
- (69) 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*. [§5-403 of the *Regulations*]
- (70) 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) and 556a(d)]
- (71) 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) and 556a(d)]
- (72) 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] [§§5-501, 5-1004, and 5-1013(a) of the *Regulations*]

- (73) Renewable Energy Projects – Right to Appeal to Public Service Board: 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 Service Board 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 Service Board 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. For further information, see the Rules and General Orders of the Public Service Board, available on line at www.psb.vermont.gov. The address for the Public Service Board is 112 State Street, Montpelier, Vermont, 05620-2701 (Tel. # 802-828-2358).
- (74) 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 on line at www.vermontjudiciary.org. The address for the Environmental Court is 2418 Airport Road, Suite 1, Barre, VT 05641 (Tel. # 802-828-1660).
- (75) Conditions (1) through (20), (24) through (27), (29), (30), (34) through (36), and (41) are derived from the new source review requirements of Subchapter V of the *Regulations*. With the exception of the cited new source review conditions, this Operating Permit shall expire as indicated on the cover page to this Permit. The Permittee shall submit to the Agency a complete application for renewal of the Operating Permit at least twelve (12) months before the expiration of the Operating Permit. If a timely and administratively complete application for an operating permit renewal is submitted to the Secretary, but the Secretary has failed to issue or deny such renewal before the end of the term of this Operating Permit, then the Permittee may continue to operate the subject source and all terms and conditions of this Operating Permit shall remain in effect until the Secretary has issued or denied the operating permit renewal. However, this Operating Permit shall automatically expire if, subsequent to the renewal application being determined or deemed administratively complete pursuant to §5-1006 of the *Regulations*, the Permittee fails to submit any additional information required by the Secretary as well as information pertaining to changes to the Facility within thirty (30) days or such other period as specified in writing by the Secretary. [§§5-1011 and 5-1012(a) of the *Regulations*] [§§5-1005(c) and 5-1012 of the *Regulations*]

- (76) The conditions of this Permit as set forth above supersede all conditions contained in all prior Permits issued by the Agency to the Permittee for this Facility. [10 V.S.A. §§556(c) and 556a(d)]

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.

Dated this 4TH day of March, 2016.

Agency of Natural Resources

Alyssa B. Schuren, Commissioner
Department of Environmental Conservation

By: Heidi Hales
Heidi C. Hales, Director
Air Quality & Climate Division

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State of Vermont
Department of Environmental Conservation
Air Quality & Climate Division
Davis Building – 2nd Floor
One National Life Drive
Montpelier, VT 05620-3802
(802) 828-1288
FAX (802) 828-1250

AGENCY OF NATURAL RESOURCES

March 4, 2016

Joe Gay
New England Waste Services of Vermont, Inc.
25 Greens Hill Lane
Rutland, VT 05701

RE: Final Title V Air Pollution Control Permit to Construct and Operate (#AOP-14-034)
Coventry Municipal Solid Waste Facility – Coventry Landfill (Landfill Operation)

Dear Mr. Gay:

The Vermont Agency of Natural Resources, Department of Environmental Conservation, Air Quality & Climate Division (Agency) has completed its review of New England Waste Services of Vermont, Inc.'s (NEWSVT's) application for the proposed installation of an additional landfill gas (LFG) flare and a proposed increase in collected LFG volumes to 5,000 standard cubic feet per minute (scfm) at the Coventry Municipal Solid Waste Facility (Facility) – Coventry Landfill (Landfill Operation) and renewal of the Title V Permit to Operate the Landfill Operation portion of the Facility located at 21 Landfill Lane in the town of Coventry, Vermont. The Agency is now issuing a final Title V Air Pollution Control Permit to Construct and Operate approving the proposed project.

The NEWSVT Landfill Operation is co-located with Coventry Clean Energy Corporation's (CCEC's) landfill gas to energy operation (LFGTE Operation) that is located on property leased from NEWSVT at the unlined area of the Landfill Operation. The Landfill Operation and the LFGTE Operation are considered to be a single source of air emissions, and are collectively referred to the Facility. While the Facility is considered a single stationary source of emissions for purposes of permitting, separate permits are being issued, one to each owner/operator of the two operations at the Facility. The permit for the Landfill Operation is being issued to NEWSVT and the permit for the LFGTE Operation is being issued to CCEC. Each permit contains certain permit conditions and responsibilities that are shared between the two owner/operators while some conditions and responsibilities are considered solely the responsibility of one entity or the other.

Previously, all activities at the Facility were contained under a single permit issued to NEWSVT. The new permit structure is intended to provide a more appropriate allocation of permit responsibilities at the Facility for each individual owner/operator at the Facility.

Consistent with the provisions of 10 V.S.A. §556(e) and for the purposes of reducing the administrative burden of enforcing two separate permits for this Facility, the Agency has combined approval for the Air Pollution Control Permit to Construct with the approval for the Air Pollution Control Permit to Operate. The result is a combined Air Pollution Control Permit to Construct and Operate which satisfies both the construction permit (10 V.S.A. §556 and Subchapter V of the Regulations) and operating permit (10 V.S.A. §556a and Subchapter X of the Regulations) requirements for your Facility. This combined permit incorporates and supersedes all prior Permit to Construct and/or Operate approvals issued in the past. Please note this permit is valid for a period of five (5) years and an application to renew the permit must be filed at least twelve (12) months prior to the date of expiration.



Please review this Permit carefully to ensure that you are currently, and continue to be, in compliance with all the requirements contained in this Permit. There are a few key points included in this permit or that you may otherwise be subject to that the Agency would like to highlight for your convenience:

- Landfill Gas Control System: Condition (9) of this Permit requires that all LFG collected by the LFG collection system be routed to an LFG control system consisting of:
 - a) An open flare or flares designed and operated in accordance with 40 *CFR* §60.18, or
 - b) a control system designed and operated to reduce NMOC by 98 weight percent, or, when an enclosed combustion device is used for control, to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to less than 20 parts per million by volume, dry basis as hexane at 3 percent oxygen, or
 - c) A treatment system that processes the collected gas for subsequent sale or use.

The existing LFG treatment system at the LFGTE Operation that is owned and operated by Coventry Clean Energy Corporation, consisting of LFG dewatering, filtration, chilling and compression before combustion meets the definition of a "treatment system" in accordance with §60.752(b)(2)(iii).

- Operational and Recordkeeping Requirements for Landfilling Regulated Asbestos Containing Material (RACM): Condition (20) of this Permit requires the Permittee to perform disposal activities involving RACM in compliance with 40 CFR Part 61, Subpart M, §61.154. The requirements for RACM disposal activities of are contained in Condition (20) of this Permit.

Condition (41) of this Permit requires recordkeeping and reporting for landfilling activities involving RACM in compliance with 40 CFR Part 61, Subpart M, §61.154. Additional information regarding this recordkeeping and reporting requirement is contained in this Condition (41) of this Permit.

- Control of Facility SO₂ Emissions: Condition (25) of this Permit limits emissions of SO₂ from the Facility such that they shall not equal or exceed 40 tons per rolling 12-month period, requires periodic monitoring of LFG flow and the concentration of hydrogen sulfide (H₂S) in the LFG. The procedure for calculating SO₂ emissions is contained in Condition (25) of this Permit. Condition (45) of this Permit requires that records shall be maintained of LFG flow measurements and associated H₂S concentration measurements.

This 40-ton SO₂ emission limit is a Facility-wide limit, and NEWSVT will need to coordinate with CCEC regarding LFG flow measurements, H₂S concentration measurements, and calculation of Facility-wide SO₂ emissions.

- Control of Facility PM Emissions: Commencing with emissions from the month of January 2017 forward, Condition (26) of this Permit limits emissions of total PM from the Facility, such that they shall not equal or exceed 19.8 tons per rolling 12-month period, and requires periodic monitoring of LFG flow and the concentration of silica (Si) in the LFG. The procedure for calculating PM emissions is contained in Condition (26) of this Permit. Condition (46) of this Permit requires that records shall be maintained of LFG flow measurements and associated Si concentration measurements.

This 19.8-ton PM emission limit is a Facility-wide limit, and NEWSVT will need to coordinate with CCEC regarding LFG flow measurements, Si concentration measurements, and calculation of Facility-wide PM emissions.

- Control of Facility VOC Emissions: Condition (27) of this permit limits emissions of VOCs from the Facility such that they shall not equal or exceed 50 tons per rolling 12-month period. The procedure for calculating VOC emissions is contained in Condition (27) of this Permit.

This 50-ton VOC emission limit is a Facility-wide limit, and NEWSVT will need to coordinate with CCEC regarding the calculation of Facility-wide VOC emissions.

- Fuel Oil Sulfur Content: Consistent with New England regional efforts, Vermont has adopted regulations that will be lowering the allowed sulfur content of fuels oils between the years 2014 and 2018. Commencing on July 1, 2014, the sulfur content of No.2 and lighter distillate oils purchased shall not exceed 0.05 percent by weight and commencing July 1, 2018 such oils shall not exceed 0.0015 percent by weight (15 ppm). Distillate fuel oils meeting the 0.0015% by weight sulfur limit are commonly referred to as ultra-low sulfur diesel (ULSD). To the extent your permit may currently allow higher sulfur content fuel oils, this regulation will take precedence and further restrict your sulfur content on the respective dates. The Permit also requires obtaining a certification or invoice regarding the sulfur content of the fuel oil from the fuel supplier, for each shipment of fuel oil received at the Facility.

If you have any questions or comments, please feel free to contact me by phone at (802) 272-3445, by email at tony.mathis@vermont.gov, or in writing at the above address.

Sincerely,



Tony Mathis, Environmental Engineer
Engineering Services/Permitting Section
Air Quality & Climate Division

cc: Dan Weston, CCEC

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