



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

TIDEWATER REGIONAL OFFICE

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COMMONWEALTH OF VIRGINIA Department of Environmental Quality Tidewater Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Southeastern Public Service Authority of Virginia
SPSA Regional Landfill, Suffolk, Virginia
Permit No. TRO-61341

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Southeastern Public Service Authority has applied for a Title V Operating Permit for its Suffolk facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Permit Writer:

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Date: December 3, 2012

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Date: December 3, 2012

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FACILITY INFORMATION

Permittee

Southeastern Public Service Authority of Virginia
723 Woodlake Drive
Chesapeake, Virginia 23320

Facility

SPSA Regional Landfill
1 Bob Foeller Drive
Suffolk, Virginia 23434

County-Plant Identification Number: 51-800-00121

SOURCE DESCRIPTION

SIC Code 4953, NAICS Code: 562212 - The source is a municipal solid waste (MSW) landfill with a tire shredder, leachate collection system, and a landfill gas (LFG) collection and control system. Energy recovery includes a LFG fired engine installation utilizing four (4) Caterpillar engine-generators. Treated LFG is sold and piped directly to BASF Corporation (formally Ciba Specialty Chemicals, Inc.) for use as supplemental boiler fuel. Any excess LFG produced after supplying the engines and BASF is flared on site at the landfill facility.

Power Generation obtained a state NSR permit (Registration No. 61137) dated August 18, 1995 for the operation of the combustion equipment. Currently, Suffolk Energy Partners, L.L.C. is the primary operator of the LFG collection and control system. SPSA is reliant on Suffolk Energy Partners, L.L.C. to maintain and operate the GCCS equipment and the combustion/control equipment. And Suffolk Energy Partners, L.L.C. is reliant on SPSA to provide the LFG for treatment and use in the IC engine-generators. Due to the operating relationship established between SPSA and Suffolk Energy Partners, L.L.C., EPA guidance was consulted on the subject of aggregating facilities together into a single source of pollutant emissions (common control determination) for the purpose of determining the appropriate level of permitting needed to meet the requirements of the Clean Air Act (CAA). The three (3) criteria requirements necessary for the two collocated facilities to be considered as one single pollutant emitting source were met; indicating that only one Title V operating permit was required for SPSA and Suffolk Energy Partners, L.L.C. operations. Regulations often refer to the landfill 'owner' or 'operator'. SPSA will remain the sole owner and operator of the landfill. Under contract to SPSA, Suffolk Energy Partners, L.L.C. will be the operator of the LFG collection and distribution system, as well as the IC engine-generators that combust the LFG to produce electricity. It will be necessary for the two parties to expand their contracts and/or agreements to address those action items required by Federal Regulations and listed in the Title V operating permit.

The SPSA Regional landfill first began receiving waste on January 22, 1985 under authority of a permit issued by Virginia Department of Waste Management. This permit allowed for the construction of four (4) cells (Cells I - IV) at the landfill, having a combined design capacity of 12.2 million cubic yards and a total waste footprint of 103 acres. The landfill only accepts the disposal of non-liquid, non-hazardous, and non-infectious wastes. The combined disposal capacity of Cells I - IV was greater than 2.5 million megagrams of waste which resulted in the landfill being subject to the New Source Performance Standard, Subpart WWW when the 'Initial Design Capacity' report was signed. Initially below the threshold Tier II calculations for NMOC emissions, SPSA reported calculations that exceeded the threshold of 50 megagrams of NMOC per year (report of June 7, 2002 at 66.99 megagrams). Cells I - IV

were officially closed on September 21, 2009. The landfill was expanded in 2000 with the addition of Cell V having a design capacity of 6.2 million cubic yards and a waste footprint of 43.6 acres. The facility's solid waste permit was amended on November 7, 2005 to add a new waste disposal area (Cells VIA and B) which consisted of a maximum combined design capacity of 8.9 million cubic yards and a total waste footprint of 41 acres. Cell VII, although currently not constructed yet, is planned to have a design capacity of 10.8 million cubic yards of waste and a footprint of approximately 56 acres when it becomes active.

In June of 1994, a LFG collection system was installed in Cells I – IV for the purpose of providing fuel to the facility. The LFG collection system was expanded to Cell V in the spring of 2005. The collected LFG is processed through a treatment system and is then utilized as fuel for on-site power generation and off-site as a fuel supplement. Treatment involves three distinct physical processes; (1.) some type of dewatering which may be a cooling process or refrigeration, (2.) filtering through a fine screen type of filter at approximately 10 microns, to capture particulate, and (3.) compression to a psi level that will support a fuel burning device. In lieu of the approval of amendments to the NSPS, Subpart WWW, which are expected to relax the requirements pertaining to the destruction of NMOCs, an interim waiver has been granted to SPSA by the EPA, Region III, to dispense with the initial performance testing of the engines.

Considering the extent of the physical treatment processes applied to the LFG stream, at the SPSA landfill, this facility is now subject to regulations at 40 CFR 60.752(b)(2)(iii)(C). Under this section of the NSPS, "landfill gas collected from a MSW landfill may either be combusted in an appropriate control device or routed to a "treatment system that processes the collected gas for subsequent sale or use". The direct result of this determination by the EPA is that an initial performance test for the engines at Suffolk Energy Partners, L.L.C. will not be required at this time. The promulgation of a 'Landfill MACT' has added an additional requirement; a 'Startup, Shutdown and Malfunction Plan must be developed and maintained on site.

The landfill facility is a Title V source by virtue of applicability to 40 CFR Part 60, Subpart WWW, which states in part that, "all landfills whose Initial Design Capacity exceeds 2.5 million megagrams of waste capacity shall be permitted under the Title V program." The facility is a major source for Nitrogen Oxides and Carbon Monoxide. This source is located in an attainment area for all pollutants, and is a major source. The energy recovery facility was previously permitted under a Minor NSR Permit issued on August 18, 1995. Suffolk Energy Partners, L.L.C., is a co-operator of the LFG collection and control system and holder of the NSR permit.

COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

FL-1	Utility Candlestick Flare
GEN-1, GEN-2, GEN-3, GEN-4	The Caterpillar engine/generators
OS-1	Pipeline for landfill gas to BASF Corporation
LFO-1	Landfill Operations
GCCS	Gas Collection and Control System

EMISSIONS INVENTORY

A copy of the permit application emission inventory is attached. Emissions are summarized in the following tables.

2011 Actual Emissions

2011 Criteria Pollutant Emission in Tons/Year					
Emission Unit	VOC	CO	SO ₂	PM ₁₀	NO _x
Landfill Operations	27.3	---	---	---	---
Combustion Equipment	0.73	158.41	5.9	13.18	68.46
Total	28.03	158.41	5.9	13.18	68.46

2011 Facility Hazardous Air Pollutant Emissions

Pollutant	2011 Hazardous Air Pollutant Emission in Tons/Yr
Trace HAP; Landfill Operations	1.7
Trace HAP; Combustion Equipment	3.31
TOTAL	5.01

EMISSION UNIT APPLICABLE REQUIREMENTS

Limitations

The following limitations are derived from Conditions 3, 4, 5, 6, 8, 9, etc of the August 18, 1995 NSR permit issued to Power Generation, Inc./Suffolk Energy Partners for the 4 LFG-fueled Caterpillar engine/generators.

- Condition 4 - limiting the approved fuel for the engines as only LFG.
- Condition 5 - limiting the LFG throughput to engines to 656 million cubic feet per year.
- Condition 8 - limiting the criteria pollutant emissions for the engine operations.
- Condition 9 - sets the opacity limit at five (5) percent and requires VEE's on each engine stack.

The following limitations are derived from Conditions 4, 5, 11, 12, 13, 17, etc of the July 29, 2011 NSR permit issued to Southeastern Public Service Authority to upgrade the maximum LFG combustion capacity of the utility candlestick flare's main burner from 1,500 scfm to 3,000 scfm.

- Condition 4 - flare designed and used to control NMOCs in collected LFG.
- Condition 5 - establishes minimum NMOC destruction efficiency of 98 weight-percent or an outlet C_{NMOC} reduction of 20 ppmvd or less.
- Condition 11 - limiting the approved fuel for the engines as only LFG.
- Condition 12 - establishes allowance of continuous operation at 8,760 hours per year.
- Condition 17 - sets the visible emissions from the flare at no visible emissions, except for periods not to exceed a total of five (5) minutes during any two consecutive hours.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

- 9 VAC 5-50-80 “New/Modified source standard for Visible Emissions” - units may not emit greater than 20% opacity except for one six-minute period in any one hour of not more than 30% opacity (reference 40 CFR 60, Appendix A. Method 9).
- 9 VAC 5-50-20 “Facility and Control Equipment Maintenance or Malfunction” – at all times, the facility, including associated air pollution control equipment, must be maintained and operated in a manner consistent with air pollution control practices for minimizing emissions.

Periodic Monitoring

The monitoring and recordkeeping requirements in Condition 3 of the August 18, 1995 NSR permit have been modified to meet Part 70 requirements.

Condition 3 - requires monitoring of the gas flow rate from the GCCS to the internal combustion engines.

- ♦ Facility emissions are based on the assumption that any efficient LFG collection system has a maximum capture rate of 75% on the landfill.
- ♦ The VOC emissions assumed a default value equal to 39% of the generated NMOC content in the LFG flow.

Testing

Condition 6 of the August 18, 1995 NSR permit describes emission testing requirements for the internal combustion engines. Because the facility processes all of the collected LFG in the ‘treatment system,’ the testing of combustion devices has been deferred.

Recordkeeping

The permits include requirements for maintaining records of all required monitoring and testing. These records include the annual consumption of LFG for the internal combustion engines and flare. Condition 10 of the August 18, 1995 NSR permit requires records of LFG consumption by the internal combustion engines. Condition 21 of the July 29, 2011 NSR permit requires records of LFG consumption by the flare.

Reporting

All reports required by Subpart WWW (Section 60.755) and the Landfill MACT, Subpart AAAA shall be prepared and submitted to the Tidewater Regional Office in accordance with procedures outlined in Subpart WWW (Section 60.757) and the Landfill MACT, Subpart AAAA.

Streamlined Requirements

The permit does not contain any streamlining of permit requirements.

CHANGES TO THE TITLE V PERMIT

Replacement of the main burner on existing utility candlestick flare FL-1:

On July 29, 2011 a state NSR permit was issued to Southeastern Public Service Authority for the replacement of the existing flare's 1,500 scfm main burner with a new burner rated at 3,000 scfm.

Selection of new 'k' value for calculation of the LFG production rate:

Because landfills are growing changing emission sources, LFG generation rates need to be calculated regularly to keep tabs on actual LFG production and to update the value of constants used in the EPA Landfill Gas Emissions Model (LandGEM). The consultant for SPSA (HDR Engineering) obtained data on 'Refuse Fill History' and projected MSW tonnages for operating years 2012 through 2017 (landfill closure year).

The LandGEM model uses a first-order decay equation to predict LFG generation based on the amount and age of waste in-place. L_0 is set to equal 100 cubic meters of methane per Megagram (Mg) of waste in-place (AP-42, Section 2.4). The 'k' value for each landfill is a site-specific number for the methane generation rate constant. The generation rate for the methane used in the LandGEM model for the SPSA Regional Landfill (Cells I through VII) was adjusted from the previous 2007 'k' value of 0.06/yr to the 0.04/yr default value for areas receiving 25 inches or more of rainfall per year. The methane content in the LFG was assigned a value of 55% (by volume) and the NMOC concentration in LFG was set to 234 ppm by volume (ppmv) as hexane based on the results of the Facility's Tier 2 Emission Test conducted on February 26, 2002.

Calculation of the maximum gas flow rate for the five-year period (2012 - 2017) of the Title V permit.

Using the calculations and assumptions from above, the maximum LFG flow rate for the operating year 2017 is equal to 5,957 scfm. The LFG is partitioned as follows:

Maximum LFG flow rate to Caterpillar engine gensets =	1,300 scfm
Maximum LFG flow rate to offsite - BASF Corporation =	1,657 scfm
Maximum LFG flow rate to the utility flare =	3,000 scfm
Total LFG flow =	<u>5,957 scfm</u>

The Title V operating permit was amended on August 23, 2010 to incorporate the following changes:

- Document date for the updated SPSA Landfill Odor Control Plan and Landfill Gas Collection and Control System Design Plan;
- The ownership name change of the former Ciba Specialty Chemicals, Inc. to that of BASF Corporation, as referenced in the Source Description section of the permit; and
- Engine non-applicability to NSPS Subpart JJJJ and MACT ZZZZ as listed in the INAPPLICABILITY REQUIREMENTS table. Applicability status of the four (4) Caterpillar gas SI engines was changed to exempt for LFG-fired stationary engines as cited in 40 CFR 63.6590(b)(3) of the MACT. The spark-ignited engines were also exempted for applicability to 40 CFR 60, Subpart JJJJ as the construction date for the engines pre-dated the NSPS applicability dates.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

Comments on General Conditions

B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.1-20.01:2 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement No. 2-2003".

This general condition cites the Article(s) that follow(s):

Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources

This general condition cites the sections that follow:

9 VAC 5-80-80	Application
9 VAC 5-80-140	Permit Shield
9 VAC 5-80-150	Action on Permit Applications

F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

This general condition contains a citation from the Code of Federal Regulations as follows:

40 CFR 60.13 (h). Monitoring Requirements.

J. Permit Modification

This general condition cites the sections that follow:

9 VAC 5-80-50	Applicability, Federal Operating Permit For Stationary Sources
9 VAC 5-80-190	Changes to Permits
9 VAC 5-80-260	Enforcement
9 VAC 5-80-1100	Applicability, Permits For New and Modified Stationary Sources
9 VAC 5-80-1790	Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
9 VAC 5-80-2000	Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

U. Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

This general condition cites the sections that follow:

9 VAC 5-20-180 Facility and Control Equipment Maintenance or Malfunction
9 VAC 5-80-110 Permit Content

Y. Asbestos Requirements

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

This general condition contains a citation from the Code of Federal Regulations that follow:

40 CFR 61.145, NESHAP Subpart M National Emissions Standards for Asbestos as it applies to demolition and renovation.
40 CFR 61.148, NESHAP Subpart M National Emissions Standards for Asbestos as it applies to insulating materials.
40 CFR 61.150, NESHAP Subpart M National Emissions Standards for Asbestos as it applies to waste disposal.

This general condition cites the regulatory sections that follow:

9 VAC 5-60-70 Designated Emissions Standards
9 VAC 5-80-110 Permit Content.

STATE ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

9 VAC 5-50-310, Odorous Emissions
9 VAC 5-50-320, Toxic Pollutants

INAPPLICABLE REQUIREMENTS

Citation	Title of Citation	Description of Non-Applicability
40 CFR 60, Subpart Cc	Emission Guidelines for Control of Existing Sources: Municipal Solid Waste Landfills	This subpart is not applicable to the landfill because of recent modifications to the facility.
40 CFR 60, Subpart WWW	Landfill New Source Performance Standard	Engines combusting 'treated' LFG are not subject to the NSPS testing, monitoring, recordkeeping and reporting requirements.
40 CFR 63, Subpart AAAA	Landfill MACT	Recordkeeping and reporting requirements of the Landfill MACT do not apply to fuel burning units that combust 'treated' LFG.
40 CFR 63, Subpart ZZZZ	RICE MACT	Engines combusting LFG equivalent to 10 percent or more of the gross heat input on an annual basis are not subject to the MACT.
40 CFR 60, Subpart JJJJ	Stationary Spark-Ignited Engines New Source Performance Standard	The construction date for the four (4) Caterpillar gas SI engines pre-dates the NSPS Subpart JJJJ applicability dates.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)
03	Ferrous Metals Recovery	5-80-720 B	PM	N/A
04	Tire Shredding	5-80-720 B	PM	N/A
05	Leachate Lagoon	5-80-720 B	VOC	N/A
06	Diesel storage tank	5-80-720 C	VOC	10,000 gallons
07	Diesel storage tank	5-80-720 C	VOC	10,000 gallons
08	Hydraulic oil tank	5-80-720 C	VOC	3000 gallons
09	Motor oil tank	5-80-720 C	VOC	2500 gallons
10	Waste oil tank	5-80-720 C	VOC	2000 gallons
11	Diesel water tank	5-80-720 C	POC's	100 HP

¹The citation criteria for insignificant activities are as follows:
9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application
9 VAC 5-80-720 B - Insignificant due to emission levels
9 VAC 5-80-720 C - Insignificant due to size or production rate

GREENHOUSE GAS REPORTING

40 CFR Part 98 - Mandatory Greenhouse Gas Reporting: The provisions of the Final Rule for the Mandatory Reporting of Greenhouse Gases (GHG) (40 CFR Part 98) require owners and operators of general stationary fuel combustion sources that emit 25,000 metric tons or more per year of CO₂ equivalent (CO₂e) in combined emissions from such units, to report GHG emissions annually. The definition of "applicable requirement" in 40 CFR 70.2 and 71.2 does not include requirements such as those included in Part 98, promulgated under Clean Air Act (CAA) section 114(a)(1) and 208. Therefore, the requirements of 40 CFR Part 98 are not applicable under the Title V permitting program.

In accordance with 40 CFR Part 98.2 and Table A-1 of the GHG regulations, emissions reporting is required for MSW landfills that generate equivalent carbon dioxide (CO₂e) in amounts of 25,000 metric tons (27,558 short tons) or more per year. According to the LandGEM results submitted by the applicant, the landfill facility's calculated CO₂e for the years 2011 and 2017 are 41,097 short tons/year and 68,242 short tons/year, respectively. Based on these CO₂e rates, the SPSA Suffolk Regional Landfill facility is an affected source subject to the GHG emissions reporting requirements of 40 CFR Part 98. As such, GHG emissions must be reported for the landfill, as calculated pursuant to the procedures in 40 CFR Part 98, Subpart HH, and for the LFG-fired combustion sources, as calculated pursuant to the procedures in 40 CFR, Part 98, Subpart C.

As a result of several EPA actions regarding GHG under the CAA, emissions of GHG must be addressed for a Title V permit renewed after January 1, 2011. The current two (2) state minor NSR permits for the SPSA Regional Landfill contains no GHG-specific applicable requirements and there have been no modifications at the facility requiring a PSD permit. Therefore, there are no applicable requirements for the facility specific to GHG.

PUBLIC PARTICIPATION

The proposed permit renewal will be placed on public notice in the Tidewater News from Wednesday, October 17, 2012 to Friday, November 16, 2012.