Virginia Title V Operating Permit

Until such time as this permit is reopened and revised, modified, revoked, terminated or expires, the permittee is authorized to operate in accordance with the terms and conditions contained herein. This permit is issued under the authority of Title 10.1, Chapter 13, §10.1-1322 of the Air Pollution Control Law of Virginia. This permit is issued consistent with the Administrative Process Act and 9 VAC 5-80-50 through 9 VAC 5-80-305 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution of the Commonwealth of Virginia.

Authorization to operate a Stationary Source of Air Pollution as described in this permit is hereby granted to:

Permittee Name:	BFI Waste Systems of Virginia, LLC
Facility Name:	Old Dominion Landfill
Facility Location:	2001 Charles City Road Henrico County, Virginia
Registration Number:	51227
Permit Number:	PRO51227

Effective: June 6, 2006

Expiration: June 6, 2011

James J. Golden Signature Date
Deputy Regional Director

Table of Contents, 2 pages
Permit Conditions, 50 pages

Table of Contents

I. Facility Information

Permittee
BFI Waste Systems of Virginia, LLC.
2001 Charles City Road
Richmond, Virginia 23231

Responsible Official
Mr. Jeffrey P. Burrier, P.E.
General Manager

Facility
Old Dominion Landfill
2001 Charles City Road
Richmond, Virginia 23231

Contact person
Mr. Ray McGowan
Environmental Manager

AIRS Identification Number: 51-087-0209

Facility Description: NAICS Code 562212 - This facility collects and disposes of refuse (municipal solid waste) in a landfill. Initially, landfill gas may be vented to the atmosphere. When the predicted non-methane organic compound (NMOC) emission rate reaches or exceeds 50 million mega-grams per year, an approved landfill gas collection and control system shall be installed and all of the landfill gas shall be routed to the control system. A landfill gas collection system or a landfill gas collection and control system may be installed prior to the NMOC emission rate reaching 50 mega-grams per year.

II. Emission Units

Equipment to be operated consists of:

1. Process Units

Emission Unit No.	Stack No.	Emission Unit Description	Manufacturer and Date of Construction	Size/Rated Capacity
Process A				
01	Fugitive	Municipal Solid Waste Landfill	BFI Waste Systems of North America, Inc. Constructed in May, 1994, 1999 and modified in June, 2005	9.583 Million Mega-grams and 11.74 Million Cubic Yards (Note 1 below)
02	-	Leachate Storage System:	Manufacturer unknown, constructed in June 1994	-
02A	No ID	Leachate Fixed Roof Storage Tank A		516 cubic meters
02B	No ID	Leachate Fixed Roof Storage Tank B		516 cubic meters
03	Fugitive	Vehicular Activity	Not Applicable	Unknown

Note 1: This landfill capacity was reported on the permit application submitted by BFI dated August 20, 2004, as amended

2. Pollution Control Equipment

Emission Unit ID	Stack ID	Emission Unit Description	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Process A						
01	Fugitive	Municipal Solid Waste Landfill, constructed in May, 1994, modified in April, 1999 and August 20, 2004	None currently	None	NMOC, VOC, HAPs,	Permit dated 06/14/2005
02	-	Leachate Storage System:	-	-	-	-
02A	No ID	Leachate Fixed Roof Storage Tank A	None	None	VOC HAPs	-
02B	No ID	Leachate Fixed Roof Storage Tank B	None	None	VOC HAPs	-
03	Fugitive	Vehicular Activity	Wet Suppression	None	Particulate	Permit dated 06/14/2005

III. Process Equipment Requirements - (ID numbers 01, 02 and 03)

A. Limitations

1. **Solid Waste Acceptance Limit:** Deleted.
(9 VAC 5-80-110, and Condition 9 of the 06/14/2005 permit)

2. **Visible Emission Standard for Open Flares:** Each open flare installed in compliance with condition A.6 shall be designed for and operated with no visible emissions except for periods not to exceed a total of 5 minutes during any two consecutive hours, as determined by EPA Method 22 (ref. 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown and malfunction. [9 VAC 5-80-110, Condition 12 of the 06/14/2005 permit, 9 VAC 5-50-20, 9 VAC 5-50-260 and 9 VAC 5-50-410, 40 CFR 60.18(c)(1)]

3. **Visible Emission Standard for Landfill Gas Combustion Control Systems Other Than Open Flares:** Visible emissions from each combustion control system stack or vent (other than open flares) installed in compliance with condition A.6 shall not exceed five percent opacity as determined by EPA Method 9 (ref. 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown and malfunction.
(9 VAC 5-80-110, Condition 13 of the 06/14/2005 permit, 9 VAC 5-50-20 and 9 VAC 5-50-260)

4. **NMOC Emission Rate Standard:** The permittee has calculated that the NMOC emission rate is less than 50 mega-grams per year using the procedures and formula of conditions D.1 and D.2. Until such time as the calculated NMOC emission rate is equal or greater to 50 mega-grams per year or the landfill is closed, the permittee shall recalculate the NMOC emission rate annually, using the formula of condition D.1 and procedures of conditions D.2, or D.3. and shall compare the result with the NMOC emission rate standard of 50 mega-grams per year:

   a. If the calculated NMOC emission rate is equal to or greater than 50 mega-grams per year, the permittee shall submit an annual NMOC emission rate report and may elect to recalculate the NMOC emission rate using the formulae of condition D.1, and the procedures of conditions D.2 or D.3. If the permittee elects not to recalculate the NMOC emission rate or cannot demonstrate that the estimated NMOC emission rate is less than 50 mega-grams per year using the formula and procedures of conditions D.1, D.2 and D.3, then the permittee shall:

      i. Submit an approvable landfill gas collection and control system design plan to the Director, Piedmont Region within 1 year after the first annual NMOC emission rate report in which the NMOC emission rate equals or exceeds 50 mega-grams per year and apply for a solid waste permit amendment in accordance with Part VII (9 VAC 20-80-480 et seq.) of 9 VAC 20 Chapter 80 (Solid Waste Management Regulations);

      ii. Award construction contracts for the approved landfill gas collection and control system within 18 months after the first annual NMOC emission rate report in which the NMOC emission rate equals or exceeds 50 mega-grams per year;

      iii. Initiate construction on the approved landfill gas collection and control system within 20 months after the first annual NMOC emission rate report in which the NMOC emission rate equals or exceeds 50 mega-grams per year;

      iv. Complete construction on, and installation of, the approved landfill gas collection and control system within 28 months after the first annual report in which the NMOC emission rate equals or exceeds 50 mega-grams per year;

v. Achieve final compliance with all applicable design, construction, siting, performance and operational standards and specifications of this permit, and with all applicable testing and monitoring requirements of this permit, within 30 months after the first annual NMOC emission rate report in which the NMOC emission rate equals or exceeds 50 mega-grams per year; and

vi. Route all of the collected landfill gas to a control system that complies with the design, performance and operating standards of condition A.10.

b. If the calculated NMOC emission rate is less than 50 mega-grams per year, the permittee shall submit an NMOC emission rate report, except as provided in condition E.1, until such time as the permittee has closed the landfill (stopped accepting solid waste and submitted a closure report).

[9 VAC 5-40-5855 B., 9 VAC 5-40-5920 B., 9 VAC 5-80-110 Conditions 18, 21, 22, and 23 of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.752(b)(1)(ii) and (b)(2)(i), (ii), and (iii)]

5. **Landfill Gas Collection and Control System Design Plan:** An approvable landfill gas collection and control system design plan shall:

a. Be prepared by a professional engineer;

b. Meet the permit design and performance standards for either active (conditions A.6 and A.7) or passive collection systems (conditions A.6 and A.9);

c. Route all of the landfill gas to a control system that meets the permit design and performance standards for landfill gas control systems (condition A.10);

d. Include provisions for emission testing and monitoring equipment sufficient to operate in accordance with sections B and D of this permit;

e. Contain any necessary alternatives to the design and operation of the collection or control systems, the performance and operational standards, test methods, testing and operating procedures, compliance measures, monitoring parameters that would indicate proper performance, monitoring equipment and procedures, record keeping or reporting provisions of this permit proposed by the permittee; and

f. Either conform with the design, construction, and siting specifications for active collection systems found in condition A.8 or include a demonstration to the satisfaction of the Director, Piedmont Region, of the sufficiency of alternative provisions, including a demonstration that off-site migration is being controlled.

[9 VAC 5-80-110, Condition 24 of the 06/14/2005 permit, 9 VAC 5-50-40 and 9 VAC 5-50-410, 40 CFR 60.752(b)(2)(i), 60.755(a)(6), and 60.756(d) and (e)]

6. **Landfill Gas Collection System Design and Performance Standards:** All landfill gas collection systems installed by the permittee shall:

a. Be designed to handle the maximum expected gas generation flow rate from the entire area of the landfill that warrants control over the intended use period of any installed gas control or treatment system equipment. One of the equations of condition D.8 (c) shall be used to calculate maximum expected gas flow rate.

b. Have a sufficient density of wells installed and have begun collecting gas from each area, cell, or group of cells in the landfill no later than 60 days after the date on which the initial solid waste has been placed for a period of five years or more if active, or two years or more if closed or at final grade. Each well shall be placed as specified in the approved design plan and shall be installed no later than 60 days after the date on which the initial solid waste has been in place for a period of 5 years or more if active, or 2 years or more if closed or at final grade. Compliance with this requirement shall be determined from records of when and where the wells are installed and whether or not the installed collection system is demonstrated (by monitoring) to be capable of controlling and extracting landfill gas from all portions of the landfill sufficiently to meet all design, performance and operational standards;

c. Be designed to minimize off-site migration of subsurface gas; and

d. Be approved by the Director, Piedmont Region prior to commencing construction on the landfill gas collection system.

[9 VAC 5-80-110, Condition 5(a)(i, ii, iv and v) of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.752(b)(2)(ii)(A) and 60.755(a)(2) and (b)]

7. **Active Landfill Gas Collection System Design and Performance Standards:** In addition to the requirements of condition A.6, any active landfill gas collection system installed by the permittee shall collect gas at an extraction rate sufficient to maintain a negative pressure at all wellheads in the collection system without causing excess air infiltration, including any well heads connected to the system as a result of expansion or excess surface emissions, for the life of the blower, except for positive pressure under the following conditions:

a. A fire or increased well temperature,

b. Use of a geo-membrane or synthetic cover, when acceptable pressure limits are provided in the approved design plan,

c. A decommissioned well, when the design change is approved by the Director, Piedmont Region;

Compliance with this condition shall be determined by monitoring the gas pressure in the collection header and the temperature and nitrogen (or oxygen) in each of the wells monthly in accordance with conditions B.3 and B.4 and by compliance with the operating standards of conditions A.12 (a) and (b).
[9 VAC 5-80-110, Condition 5(a)(iii) of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.752(b)(2)(i) and (ii) and 60.755(a)(3) and (5)]

8. **Active Landfill Gas Collection System Design, Construction and Siting Specifications**: The permittee shall meet the following specifications in designing, constructing and siting any active landfill gas collection system:

a. The permittee shall site active collection wells, horizontal collectors, surface collectors, or other extraction devices at a sufficient density throughout all gas producing areas using the following procedures unless a demonstration to the satisfaction of the Director, Piedmont Region, of the sufficiency of alternative procedures has been made and approved by the Director, Piedmont Region:

i. The collection devices within the interior and along the perimeter areas shall be certified to achieve comprehensive control of surface gas emissions by a

professional engineer. The following issues shall be addressed in the design: depths of refuse, refuse gas generation rates and flow characteristics, cover properties, gas system expandability, leachate and condensate management, accessibility, compatibility with filling operations, integration with closure end use, air intrusion control, corrosion resistance, fill settlement, and resistance to the refuse decomposition heat.

ii. The sufficient density of gas collection devices determined in paragraph (a)(i) of this condition shall address landfill gas migration issues and augmentation of the collection system through the use of active or passive systems at the landfill perimeter or exterior.

iii. The placement of gas collection devices determined in paragraph (a)(i) of this section shall control all gas producing areas, except:

(1) Any segregated area of asbestos or non-degradable material may be excluded from collection if documented as provided under condition C.1. The documentation shall provide the nature, date of deposition, location and amount of asbestos or non-degradable material deposited in the area, and shall be provided to the Director. Piedmont Region upon request.

(2) Any nonproductive area of the landfill may be excluded from control, provided that the total of all excluded areas can be shown to contribute less than 1 percent of the total amount of NMOC emissions from the landfill. The amount, location, and age of the material shall be documented and provided to the Director, Piedmont Region upon request. A separate NMOC emissions estimate shall be made for each section proposed for exclusion, and the sum of all such sections shall be compared to the NMOC emissions estimate for the entire landfill. Emissions from each section shall be computed using the following equation:

$$Q_i = 2\ k\ L_0\ M_i\ (e^{-kti})(C_{NMOC})\ (3.6 \times 10^{-9})$$

where,

Q_i = NMOC emission rate from the i^{th} section, mega-grams per year

k = methane generation rate constant, $year^{-1}$

L_0 = methane generation potential, cubic meters per mega-gram solid waste

M_i = mass of the degradable solid waste in the i^{th} section, mega-grams

t_i = age of the solid waste in the i^{th} section, years

C_{NMOC} = concentration of non-methane organic compounds, parts per million by volume

3.6×10^{-9} = conversion factor

(3) The site-specific values for C_{NMOC} and k determined using the procedures of conditions D.6 and D.7 shall be used, if the field testing has been performed in determining the NMOC emission rate or the radii of influence (the distance from the

well center to a point in the landfill were the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k, L_0, C_{NMOC} provided in condition D.1 shall be used. The mass of non-degradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions, provided that the nature, location, age, and amount of the non-degradable material is documented as provided in (a)(iii)(1) above.

b. The permittee shall construct active landfill gas collection devices using the following equipment or procedures:

i. The landfill gas extraction components shall be constructed of polyvinyl chloride (PVC), high density polyethylene (HDPE) pipe, fiberglass, stainless steel, or other nonporous corrosion resistant material of suitable dimensions to: convey projected amounts of gases; withstand installation, static, and settlement forces; and withstand planned overburden or traffic loads. The collection system shall extend as necessary to comply with emission and migration standards. Collection devices such as wells and horizontal collectors shall be perforated to allow gas entry without head loss sufficient to impair performance across the intended extent of control. Perforations shall be situated with regard to the need to prevent excessive air infiltration.

ii. Vertical wells shall be placed so as not to endanger underlying liners and shall address the occurrence of water within the landfill. Holes and trenches constructed for piped wells and horizontal collectors shall be of sufficient cross-section so as to allow for their proper construction and completion including, for example, centering of pipes and placement of gravel backfill. Collection devices shall be designed so as not to allow indirect short circuiting of air into the cover or refuse into the collection system or gas into the air. Any gravel used around pipe perforations should be of a dimension so as not to penetrate or block perforations.

iii. Collection devices may be connected to the collection header pipes below or above the landfill surface. The connector assembly shall include a positive closing throttle valve, any necessary seals and couplings, access couplings and at least one sampling port. The collection devices shall be constructed of PVC, HDPE, fiberglass, stainless steel, or other nonporous material of suitable thickness.

c. The permittee shall convey the landfill gas to a control system through collection header pipes. The gas mover equipment shall be sized to handle the maximum gas generation flow rate expected over the intended use period of the gas moving equipment using the procedures and formula of condition D.8.

(9 VAC 5-80-110, Condition 5(a) of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.759)

9. Passive Landfill Gas Collection System Design and Performance Standards: In addition to the requirements of condition A.6, any passive landfill gas collection system installed by the permittee

shall be installed with liners on the bottom and all sides of the areas of the landfill from which gas is collected passively. The liners shall be installed in accordance with 40 CFR 258.40 and 9 VAC 20-80-250 B.
[9 VAC 5-80-110, Condition 5(b) of the 06/14/2005 permit, 9 VAC 5-40-5820 C.2.b (2)(b), and 9 VAC 5-50-410, 40 CFR 60.752(b)]

10. **Landfill Gas Control System Design and Performance Standards:** Each landfill gas control system shall meet the requirements of (a), (b), (c) , (d) or (e) below:

a. the control system shall be an open flare designed and operated in accordance with condition A.11; or

b. the control system shall be designed and operated to reduce the collected non-methane organic compounds (NMOCs) by 98 weight-percent; or

c. if the control system is an enclosed combustion device, the control system shall be designed and operated to reduce the collected NMOC by 98 weight-percent or to reduce the outlet NMOC concentration to less than 20 ppmvd (as hexane) corrected to three percent oxygen; or

d. if the control system is a boiler or process heater, the control system shall be designed and operated to reduce the collected NMOC by 98 weight-percent, the landfill gas stream shall be introduced into the flame zone, and the control device shall be operated within the parameter ranges established during the most recent performance test; or

e. the control system shall be a gas treatment system that processes the collected gas for subsequent sale or use. All emissions from any atmospheric vent from the gas treatment system shall be controlled to reduce the vented gas NMOC concentration by 98 weight-percent or to less than 20 ppmvd (as hexane) corrected to three percent oxygen.

[9 VAC 5-80-110, Condition 6 of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.752(b)(2)(iii)]

11. **Landfill Gas Open Flare Control System Design and Performance Standards**: Open flares used as landfill gas control devices:

a. Shall be operated with a flame present at all times, as determined by the methods specified in condition B.5 below; and

b. Shall be steam-assisted, air-assisted, or non assisted; and

c. If a non-assisted open flare is used, shall comply with one of the following:

i. Have a diameter of three inches or greater, have a hydrogen content of 8.0 percent or greater, and be designed for and operated with a exit velocity which is:

(1) less than 37.2 meters/second (122 ft/sec), and

(2) less than V_{max} as determined by the following equation:

$V_{max} = K_2 \times (X_{H2} - K_1)$

Where:

V_{max} = Maximum permitted velocity, m/sec

K_1 = Constant, 6.0 volume-percent hydrogen.

K_2 = Constant, 3.9 (meters/second) per volume-percent hydrogen or 12.8 (ft/sec) per volume-percent hydrogen.

X_{H2} = the volume percent of hydrogen, on a wet basis, as calculated by using the American Standard for Testing and Materials (ASTM) Method D1946-77.

ii. Combust a gas with a net heating value of 7.45 MJ/scm (200 Btu/scf) or greater, and be designed for and operated with an exit velocity less than 18.3 m/sec (60 ft/sec), or

iii. Be designed for and operated with an exit velocity which is:

(1) less than 122 m/sec (400 ft/sec), and

(2) less than the velocity V_{max} as determined by the following equation:

$Log_{10} (V_{max}) = (H_T + 28.8)/31.7$

Where:

V_{max} = Maximum permitted velocity, m/sec.

H_T = Net heating value of the gas, MJ/scm as determined by (g) below.

28.8 = Constant

31.7 = Constant

iv. Combust a gas with a net heating value greater than 37.3 MJ/scm (1000 Btu/scf), and be designed for and operated with an exit velocity equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec), or

d. If a steam-assisted open flare is used, shall comply with the following:

i. Combust a gas with a net heating value of 11.2 MJ/scm (300 Btu/scf) or greater, and be designed for and operated with an exit velocity less than 18.3 m/sec (60 ft/sec), or

ii. Be designed for and operated with an exit velocity which is:

(1) less than 122 m/sec (400 ft/sec), and

(2) less than the velocity V_{max} as determined by the following equation:

$Log_{10} (V_{max}) = (H_T + 28.8)/31.7$

Where: V_{max} = Maximum permitted velocity, m/sec.

H_T = Net heating value of the gas, MJ/scm as determined by (g) below.

28.8 = Constant

31.7 = Constant

iii. Combust a gas with a net heating value greater than 37.3 MJ/scm (1000 Btu/scf), and be designed for and operated with an exit velocity equal to or greater than 18.3 m/sec (60 ft/sec) but less than 122 m/sec (400 ft/sec), or

e. If an air-assisted open flare is used, shall comply with one of the following:

i. Combust a gas with a net heating value of 11.2 MJ/scm (300 Btu/scf) or greater, and be designed for and operated with an exit velocity less than 18.3 m/sec (60 ft/sec).

ii. Be designed for and operated with a exit velocity less than the velocity

V_{max} as determined by the following equation:

$V_{max} = 8.706 + 0.7084 (H_T)$

where:

V_{max} = Maximum permitted velocity, m/sec

8.706 = Constant

0.7084 = Constant

H_T = Net heating value of the gas, MJ/scm as determined by (g) below.

f. Flares shall be operated at all times when emissions may be vented to them.

g. The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \sum_{i=1}^{n} C_i H_i$$

Where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25 C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20 C ;

K = Constant = 1.740×10^{-7} $\frac{(1)}{(ppm)}$ $\frac{(g\ mole)}{(scm)}$ $\frac{(MJ)}{(kcal)}$

Where the standard temperature for (g mole/scm) is 20 C ;

C_i = Concentration of sample component I in ppm on a wet basis, as measured for organics by Reference Method 18 and measured for hydrogen and carbon monoxide by ASTM D1946-77; and

H_i = Net heat of combustion of sample component I, kcal/g mole at 25°C and 760 mm Hg. The heats of combustion may be determined using ASTM D2382-76 if published values are not available or cannot be calculated.

(9 VAC 5-50-410, 40 CFR 60.18)

12. Landfill Gas Collection System Operational Standards: If a landfill gas collection system is installed, the permittee shall operate the landfill gas collection system such that:

a. if the collection system is an active collection system, a negative pressure shall be maintained at all wellheads except under the following conditions:

i. A fire or increased well temperature, or

ii. Use of a geo-membrane or synthetic cover, when acceptable pressure limits are provided in the approved design plan, or

iii. A decommissioned well. A well may experience a static positive pressure after shutdown to accommodate for declining flows. All design changes shall be approved by the Director, Piedmont Region;

b. each interior wellhead in the collection system shall maintain a landfill gas temperature less than 55°C and shall maintain either a nitrogen level less than 20 percent or an oxygen level less than 5 percent. A higher operating temperature, nitrogen, or oxygen value may be established by the Director, Piedmont Region at a particular well without a change to this

permit if the permittee demonstrates to the Director, Piedmont Region that the elevated value does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens;

c. the methane concentration at the surface of the landfill shall be maintained at less than 500 ppmv above background;

d. if a landfill gas collection system is required to be installed by condition A.4, landfill gas shall be collected from each area, cell, or group of cells in the landfill for which solid waste has been in place for:

i. 5 years or more if the landfill is active, or

ii. 2 years or more if the landfill is closed or at final grade;

e. If a landfill gas control system is required to be installed by condition A.4, all collected gases shall be vented to the landfill gas control system designed and operated in compliance with conditions A.10 and A.13. In the event that the collection system is inoperable, the gas mover shall be shut down and all valves in the collection and control system contributing to venting of the landfill gas to the atmosphere shall be closed within 1 hour.

Compliance with operational requirements a, b, and c shall be determined by periodic monitoring. If monitoring demonstrates that operational standards a, b or c are not met, corrective action shall be taken as required by condition B.3 (c) and (d), condition B.4 (d) and (e), or condition B.2 (f), respectively. If the specified corrective actions are taken in conditions B.4 (d) and (e) or condition B.2 (f) as required, the monitored exceedance of operational standards b or c, respectively, is not a violation of this condition. Compliance with operational requirements d and e shall be determined by record keeping.
[9 VAC 5-80-110, Condition 7 of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.753(a through e)]

13. **Landfill Gas Control System Operational Standards:** Any landfill gas control or treatment system required by condition A.4 shall be in operation at all times when collected landfill gas is routed to the control or treatment system. In the event that the control or treatment system is inoperable, the gas mover shall be shut down and all valves in the collection and control system contributing to venting of the landfill gas to the atmosphere shall be closed within 1 hour. Compliance shall be determined by record keeping.
[9 VAC 5-80-110, Condition 8 of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.753(e and f)]

14. **Removal of a Landfill Gas Collection and Control System at a Controlled Landfill:** A landfill gas collection and control system at a controlled landfill shall not be capped or removed except when all of the following requirements are met:

a. The landfill shall have stopped accepting waste and a closure report shall have been submitted;

b. The landfill gas collection and control system shall have been in operation for a minimum of 15 years;

c. Following the procedures of condition D.9, the calculated NMOC gas produced by the landfill shall be less than 50 mega-grams per year on three successive test dates. The test dates shall be no less than 90 days apart, and no more than 180 days apart; and

d. A control equipment removal report containing documentation of items a, b, and c above, shall have been submitted.

[9 VAC 5-80-110, Condition 34 of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.752(b)(2)(v)]

15. Compliance During Periods of Startup, Shutdown and Malfunction: The provisions of condition A.1 of this permit apply at all times. The provisions of conditions A.2 through A.14 of this permit apply at all times, except during periods of start-up, shutdown, or malfunction, provided that the duration of start-up, shutdown, or malfunction shall not exceed 5 days for collection systems and shall not exceed 1 hour for treatment or control devices.
[9 VAC 5-50-410, 40 CFR 60.755(e)]

B. Monitoring

1. Test Ports and Monitoring Devices. If a landfill gas collection or control system has been installed, test ports and monitoring devices shall be installed, located, and maintained as required in sections III.B and D of this permit so as to allow for monitoring as required and emission testing upon reasonable notice at any time. Monitoring devices shall be calibrated as required by the applicable conditions under sections III.B and D of this permit.
(9 VAC 5-80-110, Condition 14 of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.756)

2. Surface Methane Monitoring: If a landfill gas collection system is installed, the permittee shall demonstrate compliance with the operational standard of condition A.12(c) using the following procedures:

a. The permittee shall measure and record the surface concentrations of methane on a quarterly basis along a monitoring route specified by a surface monitoring design plan. A surface monitoring design plan shall be developed that includes a topographical map with a monitoring route which includes:

i. monitoring along the entire perimeter of the collection area,

ii. monitoring along a pattern that traverses the landfill at 30 meter intervals (or a site-specific spacing that ensures equivalent coverage) for each collection area,

iii. monitoring where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover, and

iv. the rationale for any site-specific deviations from the 30 meter intervals. Areas with steep slopes or other dangerous areas may be excluded from the surface testing;

b. The permittee shall use an organic vapor analyzer, flame ionization detector, or other portable monitor which meets the following instrument specifications, to measure the surface concentration of methane:

   i. The portable analyzer shall meet the instrument specifications provided in 40 CFR 60, Appendix A, Reference Method 21, except that "methane" shall replace all references to VOC,

   ii. The calibration gas shall be methane, diluted to a nominal concentration of 500 parts per million in air,

   iii. To meet the performance evaluation requirements in section 3.1.3 of Reference Method 21, the instrument evaluation procedures of section 4.4 shall be used,

   iv. The calibration procedures provided in section 4.2 of Reference Method 21 shall be followed immediately before commencing a surface monitoring survey,

c. The permittee shall determine the background concentration by moving the probe inlet upwind and downwind outside the boundary of the landfill at a distance of at least 30 meters from the perimeter wells,

d. The permittee shall perform surface emission monitoring accordance with section 4.3.1 of Reference Method 21, except that the probe inlet shall be placed within 5 to 10 centimeters of the ground,

e. The permittee shall perform surface emission monitoring during typical meteorological conditions,

f. The permittee shall record any reading of 500 parts per million or more above background at any location as a monitored exceedance and the take the actions specified in (f)(I) through (v) of this condition. As long as the specified actions are taken, the exceedance is not a violation of the operational requirement of condition A.13c.

   i. The location of each monitored exceedance shall be marked and the location recorded.

   ii. Cover maintenance or adjustments to the vacuum of the adjacent wells to increase the gas collection in the vicinity of each exceedance shall be made and the location shall be re-monitored within 10 calendar days of detecting the exceedance.

   iii. If the re-monitoring of the location shows a second exceedance, additional corrective action shall be taken and the location shall be monitored again within 10 days of the second exceedance. If the re-monitoring shows a third exceedance for the same location, the action specified in (f)(v) of this condition shall be taken, and no further monitoring of that location is required until the action specified in (f)(v) has been taken.

iv. Any location that initially showed an exceedance but has a methane concentration less than 500 ppm methane above background at the 10-day re-monitoring specified in paragraph (f)(ii) or (iii) of this condition shall be re-monitored 1 month from the initial exceedance. If the 1-month remonitoring shows a concentration less than 500 parts per million above background, no further monitoring of that location is required until the next quarterly monitoring period. If the 1-month re-monitoring shows an exceedance, the actions specified in paragraph (f)(iii) or (v) shall be taken.

v. For any location where monitored methane concentration equals or exceeds 500 parts per million above background three times within a quarterly period, a new well or other collection device shall be installed within 120 calendar days of the initial exceedance. An alternative remedy to the exceedance, such as upgrading the blower, header pipes or control device, and a corresponding time line for installation may be submitted to the Director Piedmont Region for approval.

g. The permittee shall be allowed to relax monitoring requirements for a closed landfill as follows:

i. A closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring, and

ii. Any methane reading of 500 ppm or more above background detected during the annual monitoring of the closed landfill returns the frequency for that landfill to quarterly monitoring.

h. The permittee shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

[9 VAC 5-80-110, Condition 16(g) and (h), and 16 of the 06/14/2005 permit, 9 VAC 5-50-40 and 9 VAC 5-50-410, 40 CFR 60.753(d), 60.755(c) and (d), and 60.756(f)]

3. Monitoring Negative Pressure in Active Landfill Gas Collection Systems If an active landfill gas collection system is installed, the permittee shall demonstrate that the landfill gas is extracted at a sufficient rate in accordance with conditions A.7 and A.12(a) using the following procedures:

a. The permittee shall install a sampling port at each wellhead

b. The permittee shall measure and record the gauge pressure in the gas collection header at each individual well monthly.

c. Except for the three deviations allowed by conditions A.7 and A.12(a), if a positive pressure exists in the gas collection header at any well, the permittee shall initiate action to correct the exceedence within 5 calendar days,

d. If negative pressure cannot be achieved without excess air infiltration within 15 calendar days of the first measurement of positive pressure, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial measurement of positive pressure, except:

i. The permittee is not required to expand the system during the first 180 days after startup of the active landfill gas collection system, and

ii. An alternative time line for correcting the exceedance may be submitted to the Director, Piedmont Region for approval.

e. Any attempted corrective measure shall not cause exceedance of other operational or performance standards.

[9 VAC 5-80-110, Condition 16(a) and 17 of the 06/14/2005 permit, 9 VAC 5-50-40 and 9 VAC 5-50-410, 40 CFR 60.753(b), 60.755(a)(3) and (4), and 60.756(a)(1)]

4. Monitoring Landfill Gas Temperature and Nitrogen or Oxygen in Active Landfill Gas Collection Systems. If an active landfill gas collection system is installed, the permittee shall demonstrate that the landfill gas is extracted without excess air infiltration into the landfill in accordance with conditions A.7 and A.12 (b) by compliance with all of the following requirements:

a. The permittee shall install a sampling port and a thermometer or other temperature measuring device, or an access port for temperature measurements at each wellhead.

b. The permittee shall monitor (and record) landfill gas temperature at each wellhead monthly.

c. The permittee shall monitor (and record) the nitrogen or oxygen concentration in the landfill gas at each wellhead monthly.

d. If a well exceeds one of the performance or operating requirements from conditions A.7 and A.12 (b), the permittee shall initiate action to correct the exceedance within 5 calendar days.

e. If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement of the exceedance, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance. An alternative time line for correcting the exceedance may be submitted to the Director, Piedmont Region for approval.

f. Any attempted corrective measure shall not cause exceedance of other operational or performance standards.

[9 VAC 5-80-110, Conditions 16(b) and (c), and 17 of the 06/14/2005 permit, 9 VAC 5-50-40 and 9 VAC 5-50-410, 40 CFR 60.753(b), 60.755(a)(3) and (4), and 60.756(a)(1)]

5. Monitoring of an Open Flare Pilot Flame: If installation of a landfill gas control device is required by condition A.4(a), the permittee seeking to comply with condition A.10 using an open flare shall install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

a. A heat-sensing device, such as an ultraviolet beam sensor or thermocouple, at the pilot light or the flame itself to indicate the continuous presence of a flame.

b. A device that records flow to or bypass of the flare. The owner or operator shall either:

i. Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or

ii. Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

[9 VAC 5-80-110, Condition 16(e) and (f) of the 06/14/2005 permit, 9 VAC 5-50-40 and 9 VAC 5-50-410, 40 CFR 60.753(f), 60.756 and 60.18(f)(2)]

6. **Monitoring of an Enclosed Combustor:** If installation of a landfill gas control device is required by condition A.4 (a), the permittee seeking to comply with condition A.10 using an enclosed combustor shall install, calibrate, maintain, and operate according to the manufacturer's specifications the following equipment:

a. A temperature-monitoring device equipped with a continuous recorder and having a minimum accuracy of ± 1 percent of the temperature being measured expressed in degrees Celsius or ± 0.5°C, whichever is greater. A temperature-monitoring device is not required for boilers or process heaters with design heat input capacity greater than 44 megawatts.

b. A device that records flow to or bypass of the flare. The owner or operator shall either:

i. Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or

ii. Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained in the closed position and that the gas flow is not diverted through the bypass line.

[9 VAC 5-80-110, Condition 16(d) and (f) of the 06/14/2005 permit, 9 VAC 5-50-40 and 9 VAC 5-50-410, 40 CFR 60.753(f), 60.756(b)]

7. **Monitoring of Control Devices Other Than Open Flares or Enclosed Combustors:** A permittee seeking to demonstrate compliance with condition A.10 using a device other than an open flare or an enclosed combustor shall provide information satisfactory to the Director, Piedmont Region as provided in condition A.6 (e) describing the operation of the control device, the operating parameters that would indicate proper performance, and appropriate monitoring procedures.
[9 VAC 5-50-40 and 9 VAC 5-50-410, 40 CFR 60.756(d)]

8. **Monitoring of Alternative Landfill Gas Collection Systems:** A permittee seeking to install a collection system that does not meet the specifications in condition A.8 or seeking to monitor alternative parameters to those required by conditions A.12, B.2, B.3, and B.4 shall provide information satisfactory to the Director, Piedmont Region as provided in condition A.5 (f) describing the design and operation of the collection system, the operating parameters that would indicate proper performance, and appropriate monitoring procedures.
[9 VAC 5-50-40 and 9 VAC 5-50-410, 40 CFR 60.756(e)]

9. **Periodic Monitoring of Sources with Visible Emission Limits:** Each emission unit which is subject to a visible emission limit and which operates for a total of 6 hours or more during any calendar week, shall be observed visually for a six minute period at least once during that calendar week to determine if there are any visible emissions from the emission unit other than a short, white condensed -water plume. If visible emissions are present at any time during the observation period, a visible emission evaluation (VEE) shall be performed by a certified observer in accordance with 40 CFR 60, Appendix A, Reference Method 9 or 22 (as applicable), within 48 hours unless corrective adjustment, maintenance or repair has corrected the condition within 12 hours of the observation. The weekly observation shall not be conducted during periods of startup, shutdown, malfunction or maintenance. Observed visible emissions shall not be considered a reportable exceedence unless the subsequent VEE confirms a violation of the applicable standard. Records of the observation and any corrective adjustment, maintenance or repair performed to correct the abnormal emission condition shall be kept in accordance with condition C.1. A visual observation of an emission unit is not required during any calendar week in which a VEE has been performed on that emission unit.
(9 VAC 5-80-110 E.3)

C. Record keeping

1. **Required Records:** The permittee shall maintain records of all emission data and operating parameters necessary to demonstrated compliance with this permit. The content of and format of such records shall be arranged with the Director, Piedmont Region. These records shall include, but are not limited to:

   a. The original design capacity report, the current amount of solid waste-in-place (tons), and the year by year waste acceptance rates (tons).

   b. Description of the nature, location, amount, and date of deposition of all asbestos-containing or non-degradable waste, including asbestos and demolition refuse, placed in landfill areas which are excluded from landfill gas estimation and collection.

   c. For nonproductive areas of the landfill excluded from landfill gas collection or control, the amount, location age of the disposed material and the calculated percentage of total NMOC emissions from the landfill, which is contributed by all of the excluded areas.

   d. Records of all test samples taken for determining all site-specific NMOC concentrations and the methane generation rate constant, sample procedures, calculations and corrections.

e. Records of all annual calculations of maximum expected gas generation flow rates and NMOC emission rates.

f. For any installed landfill gas collection system, the density of wells, gas collectors (horizontal and surface) or other gas extraction devices sufficient to achieve comprehensive control of surface gases as determined by condition A.8 (a)(i).

g. For any installed enclosed control devices (other than boilers and process heaters with a design heat capacity greater than 44 megawatts), the average combustion temperature measured at least every 15 minutes and averaged over the same period as the performance test, all 3-hour periods of operation during which the average combustion temperature was more than 28°C below the average combustion temperature established during the most recent performance test, and the percent reduction of NMOC achieved by the control device.

h. For any installed boiler or process heater with a design heat input capacity of 150 MMBtu/hr and greater used as a landfill gas combustion control device, records of operational parameters sufficient to confirm all periods of operation.

i. For any installed enclosed control devices consisting of process heaters and boilers of any size, a description of the location at which the collected gas stream is introduced into the boiler or process heater over the same time period of the performance testing, and changes to the location at which the gas stream is introduced.

j. For any installed landfill gas control system, continuous records of the indication of landfill gas flow to the control device, or the indication of bypass flow, or the records of monthly inspections of the bypass line closure locks and seals

k. For any installed open flare control devices, the flare type (steam-assisted, air-assisted, or non-assisted), all visible emissions readings, heat content determination, flow rate or bypass flow rate measurements, and exit velocity determinations made during the performance test, continuous records of flare pilot flame or flare flame monitoring, and records of all periods of operation in which the flame or flare pilot flame is absent.

l. For any installed landfill gas collection system, an up-to-date plot map showing each existing and planned gas collector in the landfill gas collection system and providing a unique identification location label for each collector.

m. For any installed landfill gas collection system, up-to-date records of the installation date and location of newly installed collectors.

n. Records of all monitoring data, test results and calibrations necessary to demonstrate compliance with sections A, B and D of this permit, including but not limited to, malfunctions, operational standard exceedances, and exceedances of parameter boundaries established during the most recent performance test. Records of operational standard exceedances shall include the location of the exceedance and the measurement of that parameter recorded for the subsequent month.

o. Records of the dimensions of each leachate storage tank and an analysis showing the capacity of the storage tank.

p. Records of the occurrence and duration of any startup, shutdown or malfunction in the operation of any landfill gas collection and control system, or any periods in which a continuous monitoring system or monitoring device is inoperative.

q. Records of weekly visible emission observations, including date, time, duration, name of the observer, the presence of visible emissions other than a white water vapor plume, if any, and the nature and success of any corrective action taken in response to an observation of visible emissions.

[9 VAC 5-50-50, 9 VAC 5-80-110, Condition 33 of 06/14/2005 Permit, and 9 VAC 5-50-410, 40 CFR 60.7, 60.758, and 60.116b(b)]

2. Keeping Required Records: Required records shall be kept:

a. on-site, readily accessible and available for inspection by the DEQ;

b. as either paper or electronic records; and

c. current for the most recent five years, except as follows:

i. Records of the following parameters measured during the initial performance test or compliance determination shall be kept for the life of the control equipment (parameters measured during subsequent tests or monitoring need only be kept for the minimum five years):

(1) The calculated maximum expected gas generation flow rate.

(2) The density of wells, collectors or other gas extraction devices.

(3) The average combustion temperature (and averaging period) of enclosed combustion devices used as control devices, where required by this permit.

(4) The percent reduction of NMOC achieved by the control device.

(5) The description of the location at which the gas vent stream is introduced into a boiler or process heater used as a control device.

(6) Required records for open flare control devices.

ii. records of control device vendor specifications shall be maintained until removal of the control device,

iii. Records of dimensions and capacity of the leachate storage tanks shall be kept current for the life of the tanks; and

iv. The plot map of the existing and planned collectors in the collection system, as well as records of the installation date and location of all newly installed collectors and records of the asbestos-containing waste areas, nondegradable waste areas and nonproductive areas excluded from collection, shall be kept for the life of the collection system.

[9 VAC 5-50-50, 9 VAC 5-80-110, Condition 33 of 06/14/2005 Permit, and 9 VAC 5-50-410, 40 CFR 60.758 and 60.116b(a)]

D. Testing

1. **NMOC Emission Rate Estimate Calculation:** The permittee shall calculate the NMOC emission rate using either Equation 1 or 2 or the U. S. EPA Landfill Gas Emission Model (LANDGEM). The following default values shall be used in both equations unless specified otherwise by the procedures of conditions D.2 Or D.3: 0.05 per year for k, 170 cubic meters per megagram for L_0, and 4,000 parts per million by volume (as hexane) for C_{NMOC}.

a. The following equation shall be used if the actual year-to-year solid waste acceptance rate is known.

$$M_{NMOC} = \sum_{i=1}^{n} 2\,k\,L_0\,M_i\,(e^{-kti})\,(C_{NMOC})\,(3.6 \times 10^{-9}) \qquad \text{Equation 1}$$

Where,

M_{NMOC} = Total NMOC emission rate from the landfill, megagrams per year

k = methane generation rate constant, $year^{-1}$

L_0 = methane generation potential, cubic meters per megagram solid waste

M_i = mass of solid waste in the i^{th} section, megagrams

t_i = age of the i^{th} section, years

C_{NMOC} = concentration of NMOC, parts per million by volume as hexane

3.6×10^{-9} = conversion factor

The mass of nondegradable solid waste may be subtracted from the total mass of solid waste in a particular section of the landfill when calculating the value for M_i if documentation of the nature and amount of such wastes is maintained.

b. The following equation shall be used if the actual year-to-year solid waste acceptance rate is unknown.

$$M_{NMOC} = 2\,L_0\,R\,(e^{-kc} - e^{-kt})\,(C_{NMOC})(3.6 \times 10^{-9}) \qquad \text{Equation 2}$$

where,

M_{NMOC} = Total NMOC emission rate from the landfill, megagrams per year

k = methane generation rate constant, year $^{-1}$

L_0 = methane generation potential, cubic meters per megagram solid waste

R = average annual acceptance rate, megagrams per year

t = age of the landfill, years

C_{NMOC} = concentration of NMOC, parts per million by volume as hexane

c = time since closure, years. For an active landfill, c = 0 and e^{-kc} = 1

3.6 x 10 $^{-9}$ = conversion factor

The mass of non-degradable solid waste may be subtracted from the average annual acceptance rate when calculating the value for R if documentation of the nature and amount of such wastes is maintained.

[9 VAC 5-80-110, Conditions 21 of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.754(a)(1)]

2. **Tier 2 NMOC Emission Rate Estimate:** If a Tier 2 NMOC emission rate estimate is necessary to demonstrate that the estimated NMOC mass emission rate of the landfill is less than the standard of 50 mega-grams per year contained in condition A.4, the permittee shall comply with each of the requirements a, b, and c below in making the calculation:

   a. The permittee shall determine a site-specific NMOC concentration using the procedures of Condition D.6.

   b. The permittee shall calculate a Tier 2 NMOC mass emission rate using:

      i. the formulae of condition D.1,

      ii. the default value for the methane generation potential (L_0) specified in condition D.1,

      iii. the default value for the methane generation constant (k) specified in condition D.1, and

      iv. the most recent site-specific NMOC concentration of the landfill gas (C_{NMOC}) determined in (a) above.

   c. The permittee shall compare the calculated Tier 2 NMOC emission rate with the NMOC emission rate standard of condition A.4. If the NMOC mass emission rate is less than 50 mega-grams per year, the permittee shall retest for the site-specific NMOC concentration within 5 years and recalculate the Tier 2 NMOC emission rate using the revised site-specific NMOC concentration.

[9 VAC 5-80-110, Condition 22 of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.754(a)(3)]

3. **Tier 3 NMOC Emission Rate Estimate:** If a Tier 3 NMOC emission rate estimate is necessary to demonstrate that the estimated NMOC mass emission rate of the landfill is less than the standard of 50 mega-grams per year contained in condition A.4, the permittee shall comply with each of the requirements a, b, and c below in making the calculation:

a. The permittee shall determine a site-specific methane generation rate (k) using the procedures of Condition D.7. Calculation of the site-specific methane generation constant (k) shall be performed only once and this value shall be used in all subsequent annual NMOC emission rate calculations.

b. The permittee shall recalculate a Tier 3 NMOC mass emission rate using:

i. the formulae of condition D.1,

ii. the default value for the methane generation potential (L_0) specified in condition D.1,

iii. the most recent site-specific NMOC concentration of the landfill gas (C_{NMOC}) determined in compliance with condition D.2 (a), and

iv. the site-specific methane generation constant (k) determined in (a) above.

c. The permittee shall compare the calculated Tier 3 NMOC emission rate with the NMOC emission rate standard of condition A.4.

[9 VAC 5-80-110, Conditions 22 and 23 of the 06/14/2005 permit, and 9 VAC 5-50-410, 40 CFR 60.754(a)(4)]

4. Landfill Gas Control System Testing: Initial performance tests shall be conducted on each landfill gas control device for which an NMOC emission reduction efficiency performance standard or outlet NMOC (ppmv, as hexane) concentration performance standard is applicable, as follows:

a. The tests shall be performed within 60 days after achieving the maximum production rate at which the facility will be operated, but shall be performed and demonstrate compliance, no later than 180 days after initial start-up of the control system and shall be performed at such other times as required by the Director, Piedmont Region. Two copies of the test results shall be provided to the Director, Piedmont Region within 60 days thereafter in accordance with condition E.6.

b. The tests shall be conducted and data reduced in accordance with the test methods and procedures contained in section III.D of this permit.

c. Performance tests shall be conducted under such conditions as the Director, Piedmont Region shall specify, based upon representative performance of the source. The permittee shall make available to the Director, Piedmont Region such records as necessary to determine the conditions of the performance tests. Operations during periods of startup, shutdown and malfunction shall not constitute representative conditions for the purposes of these tests.

d. The permittee shall submit a test protocol at least 30 days prior to testing. The details of the tests are to be arranged with the Director, Piedmont Region. Performance testing shall be subject to testing guidelines approved by the Director, Piedmont Region. Tests shall be performed under the direction of persons whose qualifications are acceptable to the Director Piedmont Region. The permittee shall provide the Director, Piedmont Region at least 30 days prior notice of any performance test and shall afford Director, Piedmont Region the opportunity to have an observer present.

e. Unless specified otherwise in the applicable standard or method, each performance test shall consist of three separate runs using the applicable test method. Each run shall be conducted for the time and under the conditions specified in the applicable standard or test method. For the purpose of determining compliance with an applicable standard, the arithmetic mean of the results of the three runs shall apply.

f. The permittee shall provide performance testing facilities as follows:

i. sampling ports adequate for the test methods applicable to the facility,

ii. safe sampling platforms,

iii. safe access to sampling platforms, and

iv. Adequate utilities for sampling and testing equipment.

g. 40 CFR 60, Appendix A, Method 25C shall be performed to determine the concentration of NMOC (as hexane) to determine compliance with the applicable performance standard. Divide the NMOC concentration from this method by six to convert from C_{NMOC} (as carbon) to C_{NMOC} (as hexane);

h. Emission reduction efficiency shall be calculated as follows:

Control Efficiency = $(NMOC_{in} - NMOC_{out}) / NMOC_{in}$,

where,

$NMOC_{in}$ = mass of NMOC entering the control device, and

$NMOC_{out}$ = mass of NMOC exiting the control device.

i. 40 CFR 60, Appendix A, Method 2, 2A, 2C, or 2D as appropriate, shall be performed to determine the actual volumetric flow rate (in units of standard temperature and pressure) from the open flares to which a standard applies. The actual exit velocity of each open flare shall be calculated to determine compliance with flare design and performance limits of condition A.11 by dividing the actual volumetric flow rate by the unobstructed (free) cross sectional area of the flare tip.

[9 VAC 5-80-110, Condition 19 of the 06/14/2005 permit, 9 VAC 5-50-30, 9 VAC 5-80-10J and 9 VAC 5-50-410, 40 CFR 60.8, and 60.754(d)]

5. Visible Emissions Evaluations: Visible Emission Evaluations (VEE) shall be conducted on the control system flares, vents, or stacks as follows:

a. The evaluations shall be conducted concurrently with initial performance tests of that control system.

b. 40 CFR, Part 60, Appendix A, Reference Method 9 shall be used to determine the compliance of control systems other than flares with the applicable visible emission standard. Each Method 9 evaluation shall consist of 30 sets of 24 consecutive observations (at fifteen second intervals) to yield a six minute average. If a continuous opacity monitor is used, the monitoring data shall be recorded during the performance test and the results provided with the performance test report.

c. 40 CFR, Part 60, Appendix A, Reference Method 22 shall be used to determine the compliance of flares with the applicable visible emission standard. The observation period is 2 hours.

d. The details of the tests are to be arranged with Director, Piedmont Region. The permittee shall submit a test protocol at least 30 days prior to testing.

e. The evaluation shall be performed no later than 180 days after start up of the control system. Should conditions prevent concurrent opacity observations, the Director, Piedmont Region shall be notified in writing, within seven days, and visible emissions testing shall be rescheduled within 30 days. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests. The inability of the permittee to secure a certified VEE observer shall not be considered a reason for not conducting the VEE concurrent with the performance test.

f. Two copies of the test result shall be submitted to the Director, Piedmont Region within 45 days after test completion and shall conform to the test report format enclosed with this permit.

[9 VAC 5-80-110, Condition 20 of the 06/14/2005 permit, 9 VAC 5-170-160, 9 VAC 5-50-30 and 9 VAC 5-50-410, 40 CFR 60.11(b) and (e)(1) and 60.18(f)(1)]

6. **Tier 2 Testing for Site-Specific NMOC Concentration:** The permittee shall use the following sampling procedure to determine the site-specific NMOC concentration for the Tier 2 NMOC emission rate estimate:

a. The permittee shall install at least two sample probes per hectare of landfill surface that has retained waste for at least 2 years. If the landfill is larger than 25 hectares in area, only 50 samples are required;

b. The sample probes shall be located to avoid known areas of nondegradable solid waste;

c. The permittee shall collect and analyze one sample of landfill gas from each probe to determine the NMOC concentration using either approved EPA reference method 25C or 18 (ref. 40 CFR 60, Appendix A). If Reference Method 18 is used, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42). If Reference Method 25C is used, the permittee shall divide the NMOC concentration from this method by six to convert from C_{NMOC} (as carbon) to C_{NMOC} (as hexane);

d. If composite sampling is used, equal volumes shall be taken from each sample probe; and,

e. If more than the required number of samples are taken, all of the samples shall be used in the analysis.

The permittee may use another method to determine the site-specific NMOC concentration if the EPA has approved the method.
[9 VAC 5-50-410, 40 CFR 60.754(a)(3) and (5)]

7. **Tier 3 Testing for Site-Specific Methane Generation Rate Constant:** The permittee shall use reference method 2E (ref. 40 CFR 60, Appendix A) to determine the site-specific methane generation rate constant (k) for the Tier 3 NMOC emission rate estimate. The permittee may use

another method to determine the site-specific methane generation rate constant (k) if the EPA has approved the method.
[9 VAC 5-50-410, 40 CFR 60.754(a)(4) and (5)]

8. **Maximum Expected Landfill Gas Generation Flow Rate Calculation:** For the purpose of calculating the maximum expected landfill gas generation flow rate from the landfill to determine compliance with condition A.6 (a), one of the following equations shall be used. The value of the k and L_0 kinetic factors shall be those published in the most recent Compilation of Air Pollution Emission Factors (AP-42) unless site-specific values have been demonstrated to be appropriate and approved by the Director, Piedmont Region. If the value of k has been determined as specified in condition D.8, the site-specific value from the test shall be used. A value of no more than 15 years shall be used for the intended use period of the gas mover equipment. The active life of the landfill is the age of the landfill plus the estimated number of years until closure.

a. For sites with known year-to-year solid waste acceptance rate:

$$Q_M = \sum_{i=1}^{n} 2\ k\ L_0\ M_i\ (e^{-kti})$$

Where,

Q_M = maximum expected landfill gas generation flow rate, cubic meters per year

k = methane generation rate constant, $year^{-1}$

L_0 = methane generation potential, cubic meters per megagram solid waste

M_i = mass of solid waste in the i^{th} section, megagrams

t_i = age of the i^{th} section, years

b. For sites with unknown year-to-year solid waste acceptance rate.

$$Q_M = 2\ L_0\ R\ (\ e^{-kc} - e^{-kt}\ )$$

Where,

Q_M = maximum expected landfill gas generation flow rate, cubic meters per year

k = methane generation rate constant, $year^{-1}$

L_0 = methane generation potential, cubic meters per megagram solid waste

R = average annual acceptance rate, megagrams per year

t = age of the landfill at equipment installation plus the time the permittee intends to use the gas mover equipment, or the active life of the landfill, whichever is less. If the equipment is installed after closure, t is the age of the landfill at installation in years.

c = time since closure, years. For an active landfill, c = 0 and $e^{-kc} = 1$

c. If a collection system has been installed, actual flow data may be used to project the maximum expected landfill gas generation flow rate instead of, or in conjunction with (a) and (b) above. If the landfill is still accepting waste, the actual measured flow data will not equal the maximum expected landfill gas generation flow rate, so calculations using (a) or (b) above shall be used to predict the maximum expected landfill gas generation flow rate over the intended period of use of the gas control system equipment.

[9 VAC 5-50-410, 40 CFR 60.755(a)]

9. Removal of the Collection and Control System - NMOC Emission Rate Calculation: After the installation of a collection and control system in compliance with the requirements of section III.A of this permit, the permittee shall calculate the NMOC emission rate for purposes of determining when the system can be removed as provided in condition A.14, as follows:

a. The following equation shall be used to calculate the NMOC emission rate:

$M_{NMOC} = 1.89 \times 10^{-3} Q_{LFG} / C_{NMOC}$

where,

M_{NMOC} = mass emission rate of NMOC, megagrams per year

Q_{LFG} = flow rate of landfill gas, cubic meters per minute

C_{NMOC} = NMOC concentration, parts per million by volume as hexane;

b. The flow rate of landfill gas, Q_{LFG}, shall be determined by measuring the total landfill gas flow rate at the common header pipe that leads to the control device using a gas flow measuring device calibrated according to the provisions of section 4 of Reference Method 2E of 40 CFR 60, Appendix A;

c. The average NMOC concentration, C_{NMOC}, shall be determined by collecting and analyzing landfill gas sampled from the common header pipe before the gas moving or condensate removal equipment using the procedures in reference method 25C or reference method 18 of 40 CFR 60, Appendix A. If using reference method 18, the minimum list of compounds to be tested shall be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42). The sample location on the common header pipe shall be before any condensate removal or other gas refining units. The permittee shall divide the NMOC concentration from reference method 25C by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane, and

d. The permittee may use another method to determine the landfill gas flow rate and NMOC concentration if the Director, Piedmont Region, has approved the method.

[9 VAC 5-50-410, 40 CFR 60.754(b)]

10. Testing for Landfill Gas Nitrogen Concentration: The nitrogen concentration of the landfill gas shall be determined using reference method 3C (ref. 40 CFR 60, Appendix A) unless an alternative test method has been approved as a part of the landfill gas collection and control system design plan approval process.
[9 VAC 5-50-410, 40 CFR 60.753(c)(1)]

11. **Testing for Landfill Gas Oxygen Concentration:** Unless an alternative test method has been approved as a part of the landfill gas collection and control system design plan approval process, the oxygen concentration of the landfill gas shall be determined using reference method 3A (ref. 40 CFR 60, Appendix A) except that:

a. The span shall be set so that the regulatory limit is between 20 and 50 percent of the span;

b. A data recorder is not required;

c. Only two calibration gases are required, a zero and span, and ambient air may be used as the span;

d. A calibration error check is not required;

e. The allowable sample bias, zero drift, and calibration drift are ± 10 percent.

[9 VAC 5-50-410, 40 CFR 60.753(c)(2)]

E. Reporting

1. **NMOC Emission Rate Reports:** Not later than April 15th of each year, the permittee shall submit an NMOC emission rate report to the Director, Piedmont Regional Office, except as provided for in paragraphs (a)(ii) or (c) of this section. The Director, Piedmont Regional Office may request such additional information as may be necessary to verify the reported NMOC emission rate.

a. The NMOC emission rate report shall contain an annual or 5-year estimate of the NMOC emission rate calculated using the formula and procedures provided in conditions D.1, D.2, D.3 or D.9, as applicable.

i. NMOC emission rate reports shall be submitted annually, except as provided for in paragraphs (a)(ii) and (c) of this condition.

ii. If the estimated NMOC emission rate as reported in the annual report to the Director, Piedmont Region is less than 50 megagrams per year in each of the next 5 consecutive years, the permittee may elect to submit an estimate of the NMOC emission rate for the next 5-year period in lieu of the annual report. This estimate shall be revised at least once every 5 years. If the actual waste acceptance rate exceeds the estimated waste acceptance rate in any year reported in the 5-year estimate, a revised 5-year estimate shall be submitted to the Administrator. The revised estimate shall cover the 5-year period beginning with the year in which the actual waste acceptance rate exceeded the estimated waste acceptance rate. The five-year estimate shall include:

(1) the estimated NMOC emission rate for each of the next consecutive five years,

(2) the current amount of solid waste-in-place and the estimated waste acceptance rate for each year of the 5 years for which an NMOC emission rate is estimated, and

(3) all data and calculations upon which these estimates are based.

b. The NMOC emission rate report shall include all the data, calculations, sample reports and measurements used to estimate the annual or 5-year emissions.

c. The permittee is exempted from the requirement to submit an NMOC emission rate report after the installation of a collection and control system in compliance with condition A.4 (a)(i) through (iii), during such time as the collection and control system is in operation and in compliance with conditions A.6, A.7, A12, A.13, and conditions B.2, B.3, and B.4.

[9 VAC 5-80-110, Condition 27 of the 6/14/2005 permit, 9 VAC 5-50-50 and 9 VAC 5-50-410, 40 CFR 60.757(b)]

2. **Revised NMOC Emission Rate Reports:** If required by condition A.4(a)(i), the permittee shall submit a collection and control system design plan to the Director, Piedmont Region within 1 year of the first report, required under condition E.1, in which the emission rate exceeds 50 mega-grams per year, except as follows:

a. If the permittee elects to recalculate the NMOC emission rate after Tier 2 NMOC sampling and analysis as provided in conditions D.1, D.2, and D.6 and the resulting rate is less than 50 mega-grams per year, annual periodic reporting shall be resumed, using the new Tier 2 determined site-specific NMOC concentration, until the calculated emission rate is equal to or greater than 50 mega-grams per year or the landfill is closed. The revised NMOC emission rate report, with the recalculated emission rate based on NMOC sampling and analysis, shall be submitted within 180 days of the first calculated exceedance of 50 mega-grams per year.

b. If the permittee elects to recalculate the NMOC emission rate after determining a site-specific methane generation rate constant (k), as provided in Tier 3 in conditions D.1, D.3, and D.7, and the resulting NMOC emission rate is less than 50 Mg/yr, annual periodic reporting shall be resumed. The resulting site-specific methane generation rate constant (k) shall be used in the emission rate calculation until such time as the emissions rate calculation results in an exceedance. The revised NMOC emission rate report based on the Tier 3 NMOC emission rate calculation and the site-specific methane generation rate constant (k) shall be submitted to the Administrator within 1 year of the first calculated emission rate exceeding 50 mega-grams per year.

[9 VAC 5-80-110, Condition 27 of the 06/14/2005 permit, 9 VAC 5-50-50 and 9 VAC 5-50-410, 40 CFR 60.757(c)]

3. **Closure Report:** A closure report shall be submitted to the Director, Piedmont Regions within 30 days of waste acceptance cessation if a landfill gas collection and control system has been installed at the landfill. The Director, Piedmont Region may request additional information as may be necessary to verify that permanent closure has taken place in accordance with the requirements of 40 CFR 258.60. If a closure report has been submitted to the Director, Piedmont Region, no additional wastes may be placed into the landfill without submitting a notification of modification as described in condition E.7 (e) and (f) to the Director, Piedmont Region.
[9 VAC 5-80-110, Condition 29 of the 06/14/2005 permit, 9 VAC 5-50-50 and 9 VAC 5-50-410, 40 CFR 60.757(d)]

4. **Control Equipment Removal Report:** If a landfill gas collection and control system has been installed at the landfill, the permittee shall submit an equipment removal report to the Director Piedmont Region no later than 30 days prior to the removal or the cessation of operation of the control equipment. The Director, Piedmont Region may request such additional information as may

be necessary to verify that all of the requirements for removal in condition A.14 have been met. The equipment removal report shall contain all of the following items:

a. A copy of the closure report submitted in accordance with condition E.3;

b. A copy of the initial performance test report demonstrating that the 15 year minimum control period has expired; and

c. Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 mega-grams or greater of NMOC per year.

[9 VAC 5-80-110, Condition 30 of the 06/14/2005 permit, 9 VAC 5-50-50 and 9 VAC 5-50-410, 40 CFR 60.757(e)]

5. **Annual Collection and Control System Monitoring Reports:** If an active landfill gas collection system designed in accordance with conditions A.6 and A.7 is installed to comply with condition A.4 (a), the permittee shall submit annual monitoring reports to the Director, Piedmont Region. The initial annual report shall be submitted within 180 days of installation and startup of the collection and control system and shall include the initial performance test report required by condition D.4. The report shall contain the following information:

a. the value and duration of all exceedances of the operational standards in condition A.12(a) (wellhead temperature) and (b)(wellhead pressure, and oxygen or nitrogen concentration);

b. description and duration of all periods when the landfill gas stream is diverted through a control system bypass line or periods of indication of control system bypass flow;

c. description and duration of all periods when the control device was not operating for a period exceeding 1 hour and the length of time that the control device was not operating;

d. all periods when the collection system was not operating in excess of five days;

e. the location of each exceedance of the 500 ppmv surface methane concentration above background, and the methane concentration recorded at each location for which an exceedance was recorded during the previous month;

f. the date of installation of each well or collection system expansion added in order to correct exceedances of operational standards in condition A.12;

g. for enclosed combustors (except for boilers and process heaters with a design heat input design capacity of 150 MMBtu per hour or greater): all 3-hour periods of operation during which the average combustion temperature was more than 28 C below the average combustion temperature at which compliance with condition A.10 was determined during the most recent performance test.

h. for all boilers and process heaters: whenever there is a change in the location of at which the vent stream is introduced into the flame zone from the location at which compliance with condition A.10 was determined during the most recent performance test.

[9 VAC 5-80-110, Condition 28 of the 06/14/2005 permit, 9 VAC 5-50-50 and 9 VAC 5-50-410, 40 CFR 60.757(f)]

6. **Performance Test Reports:** A report containing two copies of the performance test results shall be submitted to the Director, Piedmont Region no later than 60 days after the completion of performance testing of any control device installed to comply with condition A.4 (a). Performance test reports shall conform to the test report format attached as Appendix A and shall include the results of visible emission evaluations required by Condition D.5. An initial or annual collection system monitoring report shall accompany the performance test report. Additionally, the following information shall be submitted with the performance test report:

   a. a diagram of the collection system showing collection system positioning including all wells, horizontal collectors, surface collectors. or other gas extraction devices, including the locations of any areas excluded from collection and the proposed sites for the future collection system expansion;

   b. the data upon which the sufficient density of the collection system wells, horizontal collectors, surface collectors, or other gas extraction devices and the gas mover equipment sizing is based;

   c. documentation of the presence of asbestos or non-degradable material for each area from which collection wells have been excluded based upon the presence of asbestos or non-degradable material or other reasons for excluding any areas from the gas collection system;

   d. calculations of gas generation flow rates for each area excluded from the gas collection system based on non-productivity, and the sum for all such areas;

   e. provisions for increasing the gas mover equipment capacity with increased gas generation flow rate, if the present gas mover is inadequate to move the maximum flow rate expected over the life of the landfill; and

   f. provisions for the control of landfill gas migration off-site.

   [9 VAC 5-80-110, Condition 19 of the 06/14/2005 permit, 9 VAC 5-50-50 and 9 VAC 5-50-410, 40 CFR 60.19, and 60.757(g)]

7. **Notifications.** The permittee shall furnish written notification to the Director, Piedmont Region of:

   a. The date of construction of any installed landfill gas collection and control system, postmarked no later than 30 days after such date.

   b. The anticipated date of initial startup of any installed landfill gas collection and control system, postmarked not more than 60 days or less than 30 days prior to such date.

   c. The actual date of initial startup of any installed landfill gas collection and control system, postmarked within 15 days after such date.

   d. The anticipated date of performance testing of any installed landfill gas control devices, postmarked not more than 60 days or less than 30 days prior to such date.

   e. The anticipated date of landfill gas collection and control system monitoring device performance evaluations, postmarked not less than 30 days prior to such date.

f. The anticipated date of any opacity observations to be conducted in accordance with testing requirements of Section D of this permit, postmarked not less than 30 days prior to such date.

g. The anticipated date of reopening of a closed MSW landfill (anticipated date of acceptance of additional waste) postmarked at least 60 days prior to such date. A notification of modification shall accompany this notification.

h. A notification of modification postmarked at least 60 days or as soon as practicable prior to the commencement date of any physical or operational change to the landfill facility which may increase the emission rate of any air pollutant to which a standard applies, and shall contain the following information:

i. the precise nature of the change (i.e. the reopening or expansion of the landfill),

ii. the present and proposed landfill gas collection and control systems,

iii. productive capacity of the facility before and after the change (in terms of tons and cubic yards of solid waste capacity and estimated NMOC emission rate), and

iv. the expected date that the facility will begin accepting solid waste again.

i. The date that the maximum true vapor pressure of the leachate liquid in either of the leachate storage tanks exceeds 3.5 kPa and the calculated maximum true vapor pressure of the leachate liquid in the tank on that date, postmarked within 30 days after such date. The maximum true vapor pressure shall be based upon the maximum local monthly average ambient temperature as reported by the National Weather Service, and shall be determined by one of the following methods:

i. using standard reference texts,

ii. using methods and procedures from ASTM Method D2879-83,

iii. measuring the maximum true vapor pressure using alternative methods approved by EPA, or

iv. calculating the maximum true vapor pressure using alternative methods approved by EPA.

[9 VAC 5-80-110, Condition 31 of the 06/14/2005 permit, 9 VAC 5-50-50 and 9 VAC 5-50-410, 40 CFR 60.7, 60.116b(d) and 60.757(d)]

8. Copies of Reports and Notifications. Copies (one) of the reports and notifications required by [Section E. of] this permit shall be to be sent to:

Chief, Technical Assessment Branch (3AP22)
U. S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

[9 VAC 5-80-110, Condition 32 of the 06/14/2005 permit and 9 VAC 5-50-410, 40 CFR 60.7 and 60.757(d)]

IV. Facility Wide Requirements

A. Standards and Limitations

1. **New and Modified Source Permit**. The permittee is subject to the provisions of a permit to construct and operate this facility issued pursuant to 9 VAC 5-80-10. The existence of that permit shall not constitute a defense to a violation of the Virginia Air Pollution Control Law or to the Regulations for Control and Abatement of Air Pollution (9 VAC 5) and shall not relieve the permittee of the responsibility to comply with any applicable regulations, laws, ordinances, and orders of the governmental entities having jurisdiction.
(9 VAC 5-80-10 L)

2. **Modifications to the Facility**. The permittee shall not begin actual construction, reconstruction or modification of any source subject to permitting requirements under 9 VAC 5-80-10, 9 VAC 5-80, Articles 5, 8 or 9 without first obtaining a permit from the Director, Piedmont Region to construct and operate, or to modify and operate, such a source. The submittal of a complete permit application pursuant to 9 VAC 5-80, Article 1 (Federal Operating Permits) shall not affect the requirement to have a preconstruction permit under 9 VAC 5-80-10, or under 9 VAC 5-80, Articles 8 or 9.
(9 VAC 5-80-80 C.2 and D.7, and 9 VAC 5-80-10 C.1)

3. **Revisions to this Permit Due to Modifications to the Facility**. The permittee shall submit a complete application for a revision to this permit pursuant to the requirements of 9 VAC 5-80-80 within 12 months of commencing operation after any modification to the facility subject to the requirements of 112(g)(2) of the Clean Air Act or the provisions of 9 VAC 5-80-10, or 9 VAC 5-80, Articles 8 or 9. The permittee may submit the complete application for this permit revision on the same date as the application is submitted to construct and operate, or modify and operate, the affected facility under the requirements of 112(g)(2) of the Clean Air Act or the provisions of 9 VAC 5-80-10, or 9 VAC 5-80, Articles 8 or 9. No source shall operate after the time that it is required to submit a timely and complete application under this condition or condition VIII.B except in compliance with a current and valid permit issued pursuant to 9 VAC 5-80, Article 1 (Federal Operating Permits). Upon receipt of a complete and timely application for revision, this source may continue to operate subject to final action by the DEQ on the renewal application.
(9 VAC 5-80-80 C.2 and F.1 and 2)

4. **Malfunctions - Minimizing Excess Emissions.** In order to minimize the duration and frequency of excess emissions due to malfunctions of process equipment or air pollution control equipment, the permittee shall:

   a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.

   b. Maintain an inventory of spare parts that are needed to minimize the duration of air pollution control equipment breakdowns.

   (9 VAC 5-80-110, Condition 38 of the 06/14/2005 permit, and 9 VAC 5-170-160)

5. **Requirement for Written Operating Procedures:** The permittee shall have available written operating procedures for the related air pollution control equipment. Operators shall be trained in the proper operation of all such equipment and shall be familiar with the written operating procedures. These procedures shall be based on the manufacturer's recommendations, at minimum.
(9 VAC 5-80-110, Condition 39 of the 06/14/2005 permit, and 9 VAC 5-170-160)

6. **Change Of Ownership.** In the event of any change in control or ownership of the permitted source, the permittee shall notify the succeeding owner of the existence of this permit by letter and send a copy of that letter to the Director, Piedmont Region.
(9 VAC 5-80-110, Condition 41 of the 06/14/2005 permit, and 9 VAC 5-170-160)

7. **Circumvention.** The permittee shall not cause or permit the installation of any device or any means which, without resulting in reduction in the total amount of air pollutants emitted, conceals or dilutes an emission of air pollutants which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with a visible emission standard or with a standard which is based upon concentration, or the piecemeal carrying-out an operation to avoid coverage by a standard that applies only to operations larger than a specified size.
(9 VAC 5-20-70 and 9 VAC 5-50-410, 40 CFR 60.12)

B. Monitoring

1. **Performance Evaluations.** All monitoring devices shall be installed and operational prior to conducting compliance tests. Performance evaluations of the monitoring devices shall take place during the compliance tests under 9 VAC 5-50-30 or within 30 days thereafter. Two copies of the performance evaluation report shall be submitted to the Director, Piedmont Region within 45 days of said evaluation. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation and calibration of the device.
(9 VAC 5-80-110, Condition 16 and 17 of the 06/14/2005 permit, 9 VAC 5-50-40 and 9 VAC 5-50-410, 40 CFR 60.13 and 60.756)

C. Record keeping

1. **Additional Required Records:** In addition to the record keeping requirements of Section III.C, the permittee shall maintain records of all emission data and operating parameters necessary to demonstrated compliance with the general and facility wide requirements of this permit. The content of and format of such records shall be arranged with the Director, Piedmont Region. These records shall include, but are not limited to:

   a. Records of training provided as required in Condition IV.A.5 including names of trainees, date of training and nature of training.

   b. Records of all scheduled and non-scheduled maintenance.

   c. Records of performance evaluations completed as required in Section IV.B.

   These records shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.
   (9 VAC 5-80-110, Conditions 16, 17, 38 and 39 of the 06/14/2005 permit, and 9 VAC 5-170-160)

V. Insignificant Emission Unit Inventory List

The following emission units at the facility are identified in the application as insignificant emission units under 9 VAC 5-80-720:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (5-80-720 B)	Rated Capacity (5-80-720 C)
N/A	Diesel Oil Storage Tank	5-80-720 B 2	VOC	4000 gallons

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

VI. Compliance Certification and Schedule

The permittee has certified that this facility is in compliance with all state and federal regulations. No compliance schedule has been included with this permit.

VII. Permit Shield & Inapplicable Requirements

Compliance with the provisions of this permit shall be deemed compliance with all applicable requirements in effect as of the permit issuance date as identified in this permit. This permit shield covers only those applicable requirements covered by terms and conditions in this permit and the following requirements that have been specifically identified as being not applicable to this permitted facility:

Citation	Title of Citation	Description of applicability
No Inapplicable Requirements		

Nothing in this permit shield shall alter the provisions of §303 of the federal Clean Air Act, including the authority of the administrator under that section, the liability of the owner for any violation of applicable requirements prior to or at the time of permit issuance, or the ability to obtain information by (i) the administrator pursuant to §114 of the federal Clean Air Act, (ii) the Board pursuant to §10.1-1314 or §10.1-1315 of the Virginia Air Pollution Control Law or (iii) the Department pursuant to §10.1-1307.3 of the Virginia Air Pollution Control Law.
(9 VAC 5-80-140)

VIII. General Requirements

A. Federal Enforceability

All terms and conditions in this permit are enforceable by the administrator and citizens under the federal Clean Air Act, except those that have been designated as only state-enforceable.
(9 VAC 5-80-110 N)

B. Permit Expiration

This permit has a fixed term of five years. The expiration date shall be the date five years from the date of issuance. Unless a timely and complete renewal application consistent, with 9 VAC 5-80-80, has been submitted, to the Department, by the owner, the right of the facility to operate shall be terminated upon permit expiration.

1. The owner shall submit an application for renewal at least six months, but no earlier than eighteen months, prior to the date of permit expiration.

2. If an applicant submits a timely and complete application for an initial permit or renewal under this section, the failure of the source to have a permit or the operation of the source without a permit shall not be a violation of Article 1, Part II of 9 VAC 5 Chapter 80, until the Board takes final action on the application under 9 VAC 5-80-150.

3. No source shall operate after the time that it is required to submit a timely and complete application under subsections C and D of 9 VAC 5-80-80 for a renewal permit, except in compliance with a permit issued under Article 1, Part II of 9 VAC 5 Chapter 80.

4. If an applicant submits a timely and complete application under section 9 VAC 5-80-80 for a permit renewal but the Board fails to issue or deny the renewal permit before the end of the term of the previous permit, (i) the previous permit shall not expire until the renewal permit has been issued or denied and (ii) all the terms and conditions of the previous permit, including any permit shield granted pursuant to 9 VAC 5-80-140, shall remain in effect from the date the application is determined to be complete until the renewal permit is issued or denied.

5. The protection under subsections F 1 and F 5 (ii) of section 9 VAC 5-80-80 F shall cease to apply if, subsequent to the completeness determination made pursuant section 9 VAC 5-80-80 D, the applicant fails to submit by the deadline specified in writing by the Board any additional information identified as being needed to process the application.

(9 VAC 5-80-80 B, C and F, 9 VAC 5-80-110 D and 9 VAC 5-80-170 B)

C. Record Keeping and Reporting

1. All records of monitoring information maintained to demonstrate compliance with the terms and conditions of this permit shall contain, where applicable, the following:

a. The date, place as defined in the permit, and time of sampling or measurements.

b. The date(s) analyses were performed.

c. The company or entity that performed the analyses.

d. The analytical techniques or methods used.

e. The results of such analyses.

f. The operating conditions existing at the time of sampling or measurement.

(9 VAC 5-80-110 F)

2. Records of all monitoring data and support information shall be retained for at least five years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.
(9 VAC 5-80-110 F)

3. The permittee shall submit the results of monitoring contained in any applicable requirement to DEQ no later than **March 1** and **September 1** of each calendar year. This report must be signed by a responsible official, consistent with 9 VAC 5-80-80 G, and shall include:

a. The time period included in the report. The time periods to be addressed are January 1 to June 30 and July 1 to December 31.

b. All deviations from permit requirements. For purposes of this permit, a "deviation" means any condition determined by observation, data from any monitoring protocol or any other monitoring which is required by the permit that can be used to determine compliance. Deviations include exceedances documented by continuous emission monitoring or excursions from control performance indicators documented through periodic or compliance assurance monitoring.

(9 VAC 5-80-110 F)

D. Annual Compliance Certification

Exclusive of any reporting required to assure compliance with the terms and conditions of this permit or as part of a schedule of compliance contained in this permit, the permittee shall submit to EPA and DEQ no later than **March 1** each calendar year a certification of compliance with all terms and conditions of this permit including emission limitation standards or work practices. The compliance certification shall comply with such additional requirements that may be specified pursuant to §114(a)(3) and §504(b) of the federal Clean Air Act. This certification shall be signed by a responsible official, consistent with 9 VAC 5-80-80 G, and shall include:

1. The time period included in the certification. The time period to be addressed is January 1 to December 31.

2. A description of the means for assessing or monitoring the compliance of the source with its emissions limitations, standards, and work practices.

3. The identification of each term or condition of the permit that is the basis of the certification.

4. The status of compliance with the terms and conditions of this permit for the certification period.

5. Whether compliance was continuous or intermittent, and if not continuous, documentation of each incident of non-compliance.

6. Consistent with subsection 9 VAC 5-80-110 E, the method or methods used for determining the compliance status of the source at the time of certification and over the compliance period.

7. Such other facts as the permit may require to determine the compliance status of the source.

One copy of the annual compliance certification shall be sent to EPA at the following address:

Clean Air Act Title V Compliance Certification (3AP00)
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103-2029.

(9 VAC 5-80-110 K.5)

E. Permit Deviation Reporting

The permittee shall report by the next business day any deviations from permit requirements or any excess emissions, including those attributable to upset conditions as defined in this permit, the probable cause of such deviations, and any corrective actions or preventive measures taken.
(9 VAC 5-80-110 F.2)

F. Failure/Malfunction Reporting

In the event that any affected facility or related air pollution control equipment fails or malfunctions in such a manner that may cause excess emissions for more than one hour, the owner shall, as soon as practicable but no later than four daytime business hours, notify the Director, Piedmont Region by facsimile transmission, telephone or telegraph of such failure or malfunction and shall within two weeks provide a written statement giving all pertinent facts, including the estimated duration of the breakdown. Owners subject to the requirements of 9 VAC 5-40-50 C and 9 VAC 5-50-50 C are not required to provide the written statement prescribed in this paragraph for facilities subject to the monitoring requirements of 9 VAC 5-40-40 and 9 VAC 5-50-40. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the owner shall notify the Director, Piedmont Region.
(9 VAC 5-20-180 and 9 VAC 5-80-250)

G. Severability

The terms of this permit are severable. If any condition, requirement or portion of the permit is held invalid or inapplicable under any circumstance, such invalidity or inapplicability shall not affect or impair the remaining conditions, requirements, or portions of the permit.
(9 VAC 5-80-110 G.1)

H. Duty to Comply

The permittee shall comply with all terms and conditions of this permit. Any permit noncompliance constitutes a violation of the federal Clean Air Act or the Virginia Air Pollution Control Law or both and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.
(9 VAC 5-80-110 G.2)

I. Need to Halt or Reduce Activity not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
(9 VAC 5-80-110 G.3)

J. Permit Action for Cause

1. This permit may be modified, revoked, reopened, and reissued, or terminated for cause as specified in 9 VAC 5-80-110 L, 9 VAC 5-80-240 and 9 VAC 5-80-260. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.
(9 VAC 5-80-110 G.4)

2. Such changes that may require a permit modification and/or revisions include, but are not limited to, the following:

a. Erection, fabrication, installation, addition, or modification of an emissions unit (which is the source, or part of it, which emits or has the potential to emit any regulated air pollutant), or of a source, where there is, or there is the potential of, a resulting emissions increase;

b. Reconstruction or replacement of any emissions unit or components thereof such that its capital cost exceeds 50% of the cost of a whole new unit;

c. Any change at a source which causes emission of a pollutant not previously emitted, an increase in emissions, production, throughput, hours of operation, or fuel use greater than those allowed by the permit, or by 9 VAC 5-80-11, unless such an increase is authorized by an emission cap; or any change at a source which causes an increase in emissions resulting from a reduction in control efficiency, unless such an increase is authorized by an emissions cap;

d. Any reduction of the height of a stack or of a point of emissions, or the addition of any obstruction which hinders the vertical motion of exhaust;

e. Any change at the source which affects its compliance with conditions in this permit, including conditions relating to monitoring, record keeping, and reporting;

f. Addition of an emissions unit which qualifies as insignificant by emissions rate (9 VAC 5-80-720 B) or by size or production rate (9 VAC 5-80-720 C);

g. Any change in insignificant activities, as defined by 9 VAC 5-80-90 D.1.a (1) and by 9 VAC 5-80-720 B and 9 VAC 5-80-720 C.

(9 VAC 5-80-110 G, 9 VAC 5-80-110 J, 9 VAC 5-80-240, and 9 VAC 5-80-260)

K. Property Rights

The permit does not convey any property rights of any sort, or any exclusive privilege.
(9 VAC 5-80-110 G.5)

L. Duty to Submit Information

1. The permittee shall furnish to the board, within a reasonable time, any information that the board may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the board copies of records required to be kept by the permit and, for information claimed to be confidential, the permittee shall furnish such records to the board along with a claim of confidentiality.
(9 VAC 5-80-110 G.6)

2. Any document (including reports) required in a permit condition to be submitted to the board shall contain a certification by a responsible official that meets the requirements of 9 VAC 5-80-80 G.
(9 VAC 5-80-110 K.1)

M. Duty to Pay Permit Fees

The owner of any source for which a permit under 9 VAC 5-80-50 through 9 VAC 5-80-305 was issued shall pay permit fees consistent with the requirements of 9 VAC 5-80-310 through 9 VAC 5-80-355.
(9 VAC 5-80-110 H)

N. Fugitive Dust/Emission Standard

Fugitive dust and emission controls shall include the following or equivalent as a minimum:

1. Dust from grading, cell construction, waste compaction, application of daily cover, wood waste chipping operations, storage piles and traffic areas shall be controlled by wet suppression or equivalent control measures approved by the Director, Piedmont Region.

2. All material being stockpiled shall be kept moist to control dust during storage and handling, or shall be covered to minimize emissions, or shall be controlled by equivalent measures approved by the Director, Piedmont Region.

3. Dust from haul roads shall be controlled by wet suppression and prompt removal of dried sediment resulting from soil erosion and dirt spilled or tracked onto paved surfaces within the landfill.

4. Open equipment for conveying or transporting materials likely to create objectionable air pollution when airborne shall be covered, or treated in an equally effective manner at all times when in motion.

5. Reasonable precautions shall be taken to prevent deposition of dirt on public roads and subsequent dust emissions. Dirt spilled or tracked onto paved surfaces shall be promptly removed to prevent particulate matter from becoming airborne.

6. At all times the disposal of volatile organic compounds shall be accomplished by taking measures, to the extent practicable, consistent with air pollution control practices for minimizing emissions. Volatile organic compounds shall not be intentionally spilled, discarded in sewers which are not connected to a treatment plant, or stored in open containers or handled in any other manner that would result in evaporation beyond that consistent with air pollution control practices for minimizing emissions.

(9 VAC 5-80-110, Condition 3 of the 6/27/00 permit, 9 VAC 5-50-20F and 9 VAC 5-50-90)

O. Startup, Shutdown, and Malfunction

At all times, including periods of startup, shutdown, soot blowing, and malfunction, owners shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with air pollution control practices for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the board, which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.
(9 VAC 5-50-20)

P. Inspection and Entry Requirements

The permittee shall allow DEQ, upon presentation of credentials and other documents as may be required by law, to perform the following:

1. Enter upon the premises where the source is located or emissions-related activity is conducted, or where records must be kept under the terms and conditions of the permit.

2. Have access to and copy, at reasonable times, any records that must be kept under the terms and conditions of the permit.

3. Inspect at reasonable times any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit.

4. Sample or monitor at reasonable times substances or parameters for the purpose of assuring compliance with the permit or applicable requirements.

(9 VAC 5-80-110 K.2)

Q. Reopening For Cause

The permit shall be reopened by the board if additional federal requirements become applicable to a major source with a remaining permit term of three or more years. Such a reopening shall be completed not later than 18 months after promulgation of the applicable requirement. No such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended pursuant to 9 VAC 5-80-80 F.

1. The permit shall be reopened if the board or the administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

2. The permit shall be reopened if the administrator or the board determines that the permit must be revised or revoked to assure compliance with the applicable requirements.

3. The permit shall not be reopened by the board if additional applicable state requirements become applicable to a major source prior to the expiration date established under 9 VAC 5-80-110 D.

(9 VAC 5-80-110 L)

R. Permit Availability

Within five days after receipt of the issued permit, the permittee shall maintain the permit on the premises for which the permit has been issued and shall make the permit immediately available to DEQ upon request. (9 VAC 5-80-150 E)

S. Transfer of Permits

1. No person shall transfer a permit from one location to another, unless authorized under 9 VAC 5-80-130, or from one piece of equipment to another.
(9 VAC 5-80-160)

2. In the case of a transfer of ownership of a stationary source, the new owner shall comply with any current permit issued to the previous owner. The new owner shall notify the board of the change in ownership within 30 days of the transfer and shall comply with the requirements of 9 VAC 5-80-200.
(9 VAC 5-80-160)

3. In the case of a name change of a stationary source, the owner shall comply with any current permit issued under the previous source name. The owner shall notify the board of the change in source name within 30 days of the name change and shall comply with the requirements of 9 VAC 5-80-200.
(9 VAC 5-80-160)

T. Malfunction as an Affirmative Defense

1. A malfunction constitutes an affirmative defense to an action brought for noncompliance with technology-based emission limitations if the conditions of paragraph 2 are met.

2. The affirmative defense of malfunction shall be demonstrated by the permittee through properly signed, contemporaneous operating logs, or other relevant evidence that show the following:

a. A malfunction occurred and the permittee can identify the cause or causes of the malfunction.

b. The permitted facility was at the time being properly operated.

c. During the period of the malfunction the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit.

d. The permittee notified the board of the malfunction within two working days following the time when the emission limitations were exceeded due to the malfunction. This notification shall include a description of the malfunction, any steps taken to mitigate emissions, and corrective actions taken. The notification may be delivered either orally or in writing. The notification may be delivered by electronic mail, facsimile transmission, telephone, or any other method that allows the permittee to comply with the deadline. This notification fulfills the requirements of 9 VAC 5-80-110 F 2 b to report promptly deviations from permit requirements. This notification does not release the permittee from the malfunction reporting requirement under 9 VAC 5-20-180 C.

3. In any enforcement proceeding, the permittee seeking to establish the occurrence of a malfunction shall have the burden of proof. The provisions of this section are in addition to any malfunction, emergency or upset provision contained in any requirement applicable to the source.

4. The provisions of this section are in addition to any malfunction, emergency or upset provision contained in any applicable requirement.

(9 VAC 5-80-250)

U. Permit Revocation or Termination for Cause

A permit may be revoked or terminated prior to its expiration date if the owner knowingly makes material misstatements in the permit application or any amendments thereto or if the permittee violates, fails, neglects or refuses to comply with the terms or conditions of the permit, any applicable requirements, or the applicable provisions of 9 VAC 5 Chapter 80 Article 1. The board may suspend, under such conditions and for such period of time as the board may prescribe, any permit for any of the grounds for revocation or termination or for any other violations of these regulations.
(9 VAC 5-80-260)

V. Duty to Supplement or Correct Application

Any applicant who fails to submit any relevant facts or who has submitted incorrect information in a permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrections. An applicant shall also provide additional information as necessary to address any requirements that become applicable to the source after the date a complete application was filed but prior to release of a draft permit.
(9 VAC 5-80-80 E)

W. Stratospheric Ozone Protection

If the permittee handles or emits one or more Class I or II substance subject to a standard promulgated under or established by Title VI (Stratospheric Ozone Protection) of the federal Clean Air Act, the permittee shall comply with all applicable sections of 40 CFR Part 82, Subparts A to F.
(40 CFR Part 82, Subparts A - F)

X. Accidental Release Prevention

If the permittee has more, or will have more than a threshold quantity of a regulated substance in a process, as determined under 40 CFR 68.115, the permittee shall comply with the requirements of 40 CFR Part 68.
(40 CFR Part 68)

Y. Changes to Permits for Emissions Trading

No permit revision shall be required, under any federally approved economic incentives, marketable permits, emissions trading and other similar programs or processes for changes that are provided for in this permit.
(9 VAC 5-80-110 I)

Z. Emissions Trading

Where the trading of emissions increases and decreases within the permitted facility is to occur within the context of this permit and to the extent that the regulations provide for trading such increases and decreases without a case-by-case approval of each emissions trade:

1. All terms and conditions required under 9 VAC 5-80-110 except subsection N shall be included to determine compliance.

2. The permit shield described in 9 VAC 5-80-140 shall extend to all terms and conditions that allow such increases and decreases in emissions.

3. The owner shall meet all applicable requirements including the requirements of 9 VAC 5-80-50 through 9 VAC 5-80-300.

(9 VAC 5-80-110 I)

AA. Management of Asbestos-containing Materials

The permittee shall comply with the provisions of 9 VAC 5-60-10 through 9 VAC 5-60-70, 40 CFR 61 Subpart M, and Part VIII of the Virginia Solid Waste Regulations after receiving asbestos-containing waste materials at this facility.
(9 VAC 5-60-10 et seq., 9 VAC 5-60-60 et seq., 9 VAC 5-80-110 M., 9 VAC 5-170-160, 40 CFR 61.143, 61.151 and 61.154)

IX. State-Only Enforceable Requirements

The following terms and conditions are not required under the federal Clean Air Act or under any of its applicable federal requirements, and are not subject to the requirements of 9 VAC 5-80-290 concerning review of proposed permits by EPA and draft permits by affected states.

1. No owner or other person shall cause or permit to be discharged into the atmosphere from any affected facility any odorous emissions in excess of that resultant from using best available control technology, as reflected in any condition that may be placed upon the permit approval for the facility.

(9 VAC 5-50-140, VAC 5-80-110 N, and 9 VAC 5-80-300)