

City of Jacksonville
North Municipal Solid Waste (MSW) Landfill
Facility ID No.: 0310340
Duval County

Title V Air Operation Permit Renewal

FINAL Permit No.: 0310340-005-AV

Permitting and Compliance Authority:
Department of Environmental Protection
Northeast District Air Program
7825 Baymeadows Way, Suite B-200
Jacksonville, Florida 32256-7590
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FINAL Permit No.: 0310340-005-AV
Facility ID No.: 0310340
SIC No(s): 49
Project: Title V Air Operation Permit Renewal

The purpose of this permit is to renew the Title V Air Operation Permit No. 0310340-004-AV.

The existing facility is located at 11405 Island Drive, Jacksonville, Duval County, FL.; UTM Coordinates: Zone 17, 446.520 km East and 3367.680 km North; Latitude: 30° 26' 30" North and Longitude: 81° 33' 25" West.

This Title V Air Operation Permit Renewal is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210 and 62-213. The above named permittee is hereby authorized to operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the permitting authority, in accordance with the terms and conditions of this permit.

Referenced attachments made a part of this permit:

<u>Attachment</u>	<u>Description</u>
Appendix I-1	List of Insignificant Emissions Units and/or Activities
Appendix TV-6	TITLE V CONDITIONS version dated 06/23/06
Appendix 40 CFR 60	Subpart A - General Provisions
Appendix 40 CFR 61	Subpart A - General Provisions
Appendix 40 CFR 63	Subpart A - General Provisions
Appendix C	Alternate Standards for Low Gas Production Wells and Leachate Risers
Appendix D-1	Definitions for 40 CFR 60 Subpart W and 40 CFR 63 AAAA Combined - Municipal Solid Waste Landfills
Appendix E	Alternate Operating Parameter Values for Specified Gas Extraction Wells
Appendix F	Figure 4 of 40 CFR 61 Subpart M
Appendix LR-1	Local Rule Index
Appendix RR	Facility-wide State Reporting Requirements
Appendix T	Facility-wide State Testing Requirements

Landfill Gas Management System Plans
O & M Plan submitted February 2, 2003

Effective Date:	June 18, 2009
Renewal Application Due Date:	November 5, 2013
Expiration Date:	June 18, 2014



Christopher L. Kirts, P.E.
District Air Program Administrator

RFS:rfs

Section I. Facility Information

Subsection A. Facility Description.

The North Municipal Solid Waste Landfill covers an area of approximately 126 acres within the waste site boundary.

The landfill consists of four phases (Phase I, Phase II, Phase IIIa, and Phase IIIb). Landfill disposal began in late 1976 to early 1977 in Phase I and continued until early 1981, at which time filling in Phase II began. Waste disposal continued in Phase II until early 1989. In late 1983, disposal of waste in Phase I resumed and continued until early 1989. In late 1985, disposal in Phase IIIa began and continued until early 1989. Filling began in Phase IIIb in late 1988. The landfill closed in 1992.

Approximately 4.9 million megagrams of waste was deposited in the landfill during the operational life of the landfill.

The landfill operates an active landfill collection system that consists of approximately 78 vertical gas extraction wells to remove landfill gas from the four phases.

The collected landfill gas is processed through a treatment system (described below) prior to combustion at the No. 3 Utility Boiler located at JEA Northside electric generating facility on New Berlin Rd., Jacksonville, Florida as a supplemental fuel. Landfill gas is only routed through this treatment system when sent to the JEA Boiler. During those times that the JEA facility is unable to accept the landfill gas, the landfill gas is routed through a knockout tank (Peerless vertical dry scrubber Model), to an enclosed flare located onsite at the landfill (a back-up combustion device).

The provisions of 40 CFR 60, Subpart A, General Provisions, Subpart B, Adoption and Submittal of State Plans for Designated Facilities, Subpart Cc, Emission Guidelines and Compliance Times, 40 CFR 63, Subpart A, General Provisions, and 40 CFR 63, Subpart AAAA, [National Emission Standards for Hazardous Air Pollutants] Municipal Solid Waste Landfills, applies to the designated facility.

Also, included in this permit are insignificant emission units and/or activities.

Compliance Assurance Monitoring (CAM) requirements are not applicable to this facility.

Based upon the Title V air operation permit renewal application received March 4, 2008:

- The facility is a Title V source
- Major source of air pollutants, other than HAPs
- One or more emissions units subject to NSPS (40 CFR 60)
- One or more emissions units subject to NESHAP (40 CFR Part 61 or Part 63)
- This facility is classified as a PSD Major facility due to the potential CO emissions being above 250 TPY.

Subsection B. Summary of Emissions Unit ID No(s). and Brief Description(s).

<u>EU ID No.</u>	<u>Brief Description</u>
001	Municipal Solid Waste Landfill with enclosed flare

Subsection C. Relevant Documents.

The documents listed below are not a part of this permit; however, they are specifically related to this permitting action.

These documents are provided to the permittee for information purposes only:

Table 1-1, Summary of Air Pollutant Standards and Terms

Table 2-1, Summary of Compliance Requirements

Appendix A-1: Abbreviations, Acronyms, Citations, and Identification Numbers

Appendix H-1: Permit History

Statement of Basis

These documents are on file with the permitting authority:

Application for Title V Air Operation Permit Renewal received March 4, 2008.

Request for Additional Information dated April 10, 2008

Request for Additional Information dated April 14, 2008

Additional Information received August 8, 2008

Request for Additional Information dated September 5, 2008

Additional Information received December 5, 2008

Section II. Facility-Wide Conditions.

The following conditions apply facility-wide:

1. APPENDIX TV-6, TITLE V CONDITIONS, is a part of this permit.

{Permitting note: APPENDIX TV-6, TITLE V CONDITIONS, is distributed to the permittee only. Other persons requesting copies of these conditions shall be provided a copy when requested or otherwise appropriate.}

2. General Pollutant Emission Limiting Standards. Objectionable Odor Prohibited. No person shall cause, suffer, allow, or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

[Air Construction Permit No. AC16-240628; Rule 62-296.320(2), F.A.C.; and Rule 2.1001, JEPB]

3. **[Not federally enforceable.]** The facility shall be subject to City of Jacksonville Ordinance Code, Title X, Chapter 360 [Environmental Regulation], Chapter 362 [Air and Water Pollution], Chapter 376 [Odor Control], and JEPB, Rule 1.

[Final Rules with Respect to Organization, Procedure, and Practice].

4. **[Not federally enforceable.]** The facility shall be subject to JEPB Rule 2, Part Nos. I through VII and Part Nos. IX through XIII.

5. General Particulate Emission Limiting Standards. General Visible Emissions Standard.

Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). EPA Method 9 is the method of compliance pursuant to Chapter 62-297, F.A.C.

[Rules 62-296.320(4)(b)1. & 4., F.A.C.]

6. Open Burning Prohibition. Open burning is prohibited, except when determined by the Department to be the only feasible method of operation and authorized by this permit or an emergency exists which requires immediate action to protect human health and safety.

[Rule 62-296.320(3)(a)&(b), F.A.C.]

7. Prevention of Accidental Releases (Section 112(r) of CAA).

- a. The permittee shall submit its Risk Management Plan (RMP) to the Chemical Emergency Preparedness and Prevention Office (CEPPO) RMP Reporting Center when, and if, such requirement becomes applicable. Any Risk Management Plans, original submittals, revisions or updates to submittals, should be sent to:

RMP Reporting Center
Post Office Box 1515
Lanham-Seabrook, MD 20703-1515
Telephone: 301/429-5018

and,

- b. The permittee shall submit to the permitting authority Title V certification forms or a compliance schedule in accordance with Rule 62-213.440(2), F.A.C.

[40 CFR 68]

8. Insignificant Emissions Units and/or Activities. Appendix I-1, List of Insignificant Emissions Units and/or Activities, is a part of this permit.

[Rules 62-213.440(1), 62-213.430(6), and 62-4.040(1)(b), FAC, and Rules 2.501 and 2.1301, JEPB]

9. General Pollutant Emission Limiting Standards. Volatile Organic Compounds (VOC) Emissions or Organic Solvents (OS) Emissions. The permittee shall allow no person to store, pump, handle, process, load, unload, or use in any process or installation, volatile organic compounds (VOC) or organic solvents (OS) without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department.

[Rule 62-296.320(1)(a), FAC, and Rule 2.1001, JEPB]

10. Emissions of Unconfined Particulate Matter. Pursuant to Rules 62-296.320(4)(c)1., 3. & 4., F.A.C., reasonable precautions to prevent emissions of unconfined particulate matter at this facility include the following requirements (see Condition 57. of APPENDIX TV-6, TITLE V CONDITIONS):

The following requirements are "not federally enforceable":

- a. Paving and maintenance of roads, parking areas and equipment yards;
- b. Landscaping or planting of vegetation;
- c. Maintenance of paved areas as needed;
- d. Regular Mowing of grasses and care of vegetation;
- e. Limiting access to plant property by unnecessary vehicles.

No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.

[Rule 62-296.320(4)(c)1. and 3., F.A.C.]

11. General Particulate Emission Limiting Standards. General Visible Emissions Standard.

Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density of which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20 percent opacity). EPA Reference Method 9, shall be the compliance method. Testing shall be required, upon request from the Department.

[Rule 62-296.320(4)(b)1., FAC, Chapter 62-297, FAC, Rule 2.1001, JEPB, and Rule 2.1101, JEPB]

Excess Emissions

{Permitting Note: The Excess Emissions Rule at Rule 62-210.700, F.A.C., cannot vary any requirement of a NSPS or NESHAP provision}

12. Minimization of Emissions. At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions.

Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

[40 CFR 60.11(d); Rule 2.201, JEPB]

13. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction shall be prohibited.

[Rule 62-210.700(4), F.A.C.; Rule 2.201, JEPB]

14. Considering operational variations in types of industrial equipment operations affected by this rule, the Department may adjust maximum and minimum factors to provide reasonable and practical regulatory controls consistent with the public interest.

[Rule 62-210.700(5), F.A.C.; Rule 2.201, JEPB]

15. When appropriate, any recording, monitoring, or reporting requirements that are time-specific shall be in accordance with the effective date of the permit, which defines day one.

[Rule 62-213.440, F.A.C.; and Rule 2.501, JEPB]

16. Statement of Compliance. The annual statement of compliance pursuant to Rule 62-213.440(3)(a)2., FAC and Rule 2.501, JEPB shall be submitted to the Department and EPA within sixty (60) days after the end of the calendar year using DEP form No. 62-213.900(7), FAC.

[Permitting Note: This condition implements the requirements of Rules 62-213.440(3)(a)2. & 3., FAC. (see Condition 51. of APPENDIX TV-6, TITLE V CONDITIONS)]

[40 CFR 70.6, Rule 62-213.440, FAC and Rule 2.501, JEPB]

17. Startup, Shutdown, Malfunction Plan. The Permittee shall adopt and implement a written startup, shutdown, and malfunction (SSM) plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction. The plan shall meet the requirements of 40 CFR 63.6(e)(3) including containing a program of corrective action for malfunctioning processes and the air pollution control and monitoring equipment used to comply with the relevant standards of 40 CFR Part 63. The current SSM Plan shall be maintained at the facility and be available for inspection and copying by the Administrator upon request. If the SSM Plan is subsequently revised pursuant to 40 CFR 63.6(e)(3)(viii), the Permittee shall maintain at the facility each previous (i.e., superseded) version of the SSM Plan, and shall make each such previous version available for inspection and copying by the Administrator for a period of 5 years after revision of the plan. Any revisions made to the startup, shutdown, and malfunction plan in accordance with the procedures established by 40 CFR 63.6(e), shall not be deemed to constitute a Part 70 or 71 permit revision. Moreover, none of the procedures specified by the startup, shutdown, and malfunction plan for an affected source shall be deemed to fall within the permit shield.

[40 CFR 63.6(e); 40 CFR 63.1960]

18. All reports, tests, notifications or other submittals required by this permit shall be submitted to the Department's Northeast District, Air Section:

Florida Department of Environmental Protection
Northeast District Office, Air Program
7825 Baymeadows Way, Suite B-200
Jacksonville, Florida 32256-7590

Telephone: 904/807-3300
Fax: 904/448-4363

19. Any reports, data, notifications, certifications, and requests required to be sent to the United States Environmental Protection Agency, Region 4, should be sent to:

United States Environmental Protection Agency
Region 4
Air, Pesticides & Toxics Management Division
Air and EPCRA Enforcement Branch
Air Enforcement Section

61 Forsyth Street
Atlanta, Georgia 30303
Telephone: 404/562-9155, Fax: 404/562-9163

20. Certification by Responsible Official (RO). In addition to the professional engineering certification required for applications by Rule 62-4.050(3), F.A.C., any application form, report, compliance statement, compliance plan and compliance schedule submitted pursuant to Chapter 62-213, F.A.C., shall contain a certification signed by a responsible official that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Any responsible official who fails to submit any required information or who has submitted incorrect information shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary information or correct information.

[Rule 62-213.420(4), F.A.C. and Rule 2.501, JEPB]

Section III. Emissions Unit(s) and Conditions

Subsection A. This section addresses the following emissions unit(s).

Emission Unit	Brief Description
001	North Municipal Solid Waste Landfill (Collection System w/ Enclosed Flare manufactured by John Zink Co.) Number of NSPS Gas Extraction Wells.....78 Enclosed Flare Stack Height.....40' Exit Diameter.....11.4' Outlet Gas Temperature.....1,566 °F (typically) Maximum Actual Flow Rate.....3,150 acfm Starter Fuel Type.....Propane Maximum Hourly Rate.....22 scf Destruction efficiency.....98% NMOCs

Collected landfill gas is processed through a treatment system prior to combustion at the No. 3 Utility Boiler located at JEA Northside electric generating facility on New Berlin Rd., Jacksonville, Florida as a supplemental fuel. Landfill gas is only routed through this treatment system when sent to the JEA Boiler.

The landfill gas treatment system at the Fuel Gas Compressor System skid (FGCS) consists of the processes described below:

1. At the inlet a filtered vessel is used to stop particulates from entering the system. Particulate is reduced to less than 10 microns.
2. A compressor which raises the gas pressure to send the gas down the pipeline.
3. A knockout vessel which filters the compressor oil out of the gas.
4. An Air X-Changer which cools the gas and produces condensate
5. A knockout vessel to remove the condensate
6. A heat exchanger which cools the gas further and produces condensate
7. A knockout vessel to remove the condensate.

Based on present EPA Determinations, the landfill gas treatment system at the Fuel Gas Compressor System skid constitutes treatment under 40 CFR 60.752 (b)(2)(iii)(C).

During those times when landfill gas cannot be accepted at the JEA No. 3 Utility Boiler, an alternate Method of Operation is used for the control of landfill gas. The landfill gas is routed through a moisture knockout tank (Peerless vertical gas separator, Model 21-236), followed by two of three available centrifugal blowers (one is maintained on stand-by), before being combusted in an enclosed flare located onsite.

{Permitting Note: This emissions unit is subject to 40 CFR Part 60, Subpart Cc adopted by reference in Rule 62-204.800(9)(c), F.A.C.; 40 CFR Part 60, Subpart WWW adopted by reference in Rule 62-204.800(8)(b)72., F.A.C.; and 40 CFR Part 63, Subpart AAAA adopted by reference in Rule 62-204.800(11)(b)58, F.A.C

The following specific conditions apply to the emissions unit(s) listed above:

ESSENTIAL POTENTIAL TO EMIT (PTE) PARAMETERS

A.1. Landfill Capacity: Approximately 4.9 million megagrams of wastes are deposited at the landfill.

[Rule 62-210.200(203), FAC, and Rule 2.301, JEPB]

A.2. Landfill Gas (LFG) Collection System -Design: The landfill gas collection system at this facility is an active collection system. The collection system shall be designed as follows:

- (1) To handle the maximum expected gas flow rate from the entire area of the landfill that warrants control over the intended use period of the gas control or treatment system equipment;
- (2) Collect gas from each area, cell, or group of cells in the landfill in which the initial solid waste has been placed for a period of 2 years or more if closed or at final grade;
- (3) Collects gas at a sufficient extraction rate;
- (4) Designed to minimize off-site migration of subsurface gas.

[40 CFR 60.33c(b) and (e)(2)(i); 40 CFR 60.752(b)(2)(ii)(A)]

A.3. LFG Collection System -Hours of Operation: The hours of operation are not restricted, i.e., 8760 hours per year.

[Rule 62-210.200(203), FAC, and Rule 2.301, JEPB]

A.4. Method of Operation -LFG Collection System: The LFG collection system shall be operated such that gas is collected from each area, cell, or group of cells in the MSW landfill in which solid waste has been in place for 2 years or more.

[40 CFR 60.753(a)(2)]

- A.5. LFG Collection System – Routing of Collected Landfill Gas:** The LFG Collection System shall be operated such that all collected gases are vented to a control system designed and operated in compliance with the requirements in either Condition A.6. or A.7.

[40 CFR 60.752(b)(2)(iii); 40 CFR 60.34c; 40 CFR 60.753(e)]

- A.6. LFG Control System - JEA No. 3 Utility Boiler- Method of Operation:** Collected landfill gas shall be routed and treated in the Fuel Gas Compressor System prior to being routed to the JEA No. 3 Utility boiler for combustion as a supplemental fuel. All emissions from any atmospheric vent from the Fuel Gas Compressor System (gas treatment system) shall be subject to the requirements of Conditions A.7 and A.11., and routed to the enclosed flare for combustion.

[40 CFR 60.34c; 40 CFR 60.752(b)(2),(iii)(C)]

- A.7. LFG Control System – Enclosed Flare- Method of Operation:** Collected landfill gas shall be routed to the moisture knockout tank followed by the centrifugal blowers prior to being routed to Enclosed Flare. The enclosed flare shall be designed and operated as specified in Conditions A.8.b and A.11.

[40 CFR 60.34c; 40 CFR 60.752(b)(2),(iii)(B)]

- A.8.a. LFG Control System – Enclosed Flare- Method of Operation:** The flare shall fire propane gas as its pilot fuel.

[Rules 62-4.160(2), 62-210.200(PTE), F.A.C.; Construction Permit No. AC16-240628]

- A.8.b. LFG Control System – Enclosed Flare- Method of Operation:** The flare shall be operated within the parameter ranges established during the most recent performance test required by Condition A.38. The operating parameters to be monitored are stated in Condition A.18.

The average temperature during the December 18, 2008 performance test was 1364 °F.

[40 CFR 60.752(b)(2)(iii)(B)(2); December 18, 2008 Performance Test]

- A.9. LFG Control System – Enclosed Flare- Hours of Operation:** The hours of operation are not restricted, i.e., 8760 hours per year.

[Rule 62-210.200(203), FAC, and Rule 2.301, JEPB]

- A.10. LFG Control System – Enclosed Flare- Permitted Capacity:** The Maximum Process Throughput Rate of the enclosed flare shall not exceed 3,150 SCFM of landfill gas.

[Rules 62-4.160(2), and 62-210.200(PTE), F.A.C.]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

{Permitting note: Table 1-1, Summary of Air Pollutant Standards and Terms, summarizes information for convenience purposes only. This table does not supersede any of the terms or conditions of this permit.}

{Permitting Note: Unless otherwise specified, the averaging time for these conditions is based on the specified averaging time of the applicable test method.}

A.11. LFG Control System - Enclosed Flare: The flare shall be designed and operated to either reduce NMOC by 98 weight percent or reduce the outlet NMOC concentration to 20 parts per million as hexane by volume, dry basis at 3 percent oxygen, or less.

The flare shall be operated at all times when the collected gas is routed to the LFG Collection System and LFG cannot be accepted at the JEA Northside Unit No. 3 boiler.

Enclosed combustor means an enclosed firebox which maintains a relatively constant limited peak temperature generally using a limited supply of combustion air. An enclosed flare is considered an enclosed combustor.

[40 CFR 60.33c(c)(3); 40 CFR 60.751; 40 CFR 60.752(b)(2)(iii)(B); 40 CFR 60.753(f)]

LANDFILL GAS COLLECTION SYSTEM OPERATION REQUIREMENTS

A.12. Wellhead Operation- Pressure: The LFG Collection System shall be operated with negative pressure at each wellhead except under the following conditions:

- (1) A fire or increased well temperature. The owner or operator shall record instances when positive pressure occurs in efforts to avoid a fire. These records shall be submitted with the annual reports as provided in Condition A.30.(1);
- (2) Use of a geomembrane or synthetic cover. The owner or operator shall develop acceptable pressure limits in the design plan;
- (3) A decommissioned well. A well may experience a static positive pressure after shut down to accommodate for declining flows. All design changes shall be approved by the Administrator;

[40 CFR 60.34c; 40 CFR 60.753(b)]

A.13. Wellhead Operation-Temperature, Nitrogen or Oxygen Level: Each interior wellhead in the LFG Collection System shall be operated with a landfill gas temperature less than 55° C (131° F) and with either a nitrogen level less than 20 percent or an oxygen level less than 5 percent.

The owner or operator may establish a higher operating temperature, nitrogen, or oxygen value at a particular well after obtaining written approval from the Administrator. A higher operating value demonstration shall show supporting data that the elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens.

- (1) The nitrogen level shall be determined using Method 3C.
- (2) The oxygen shall be determined by an oxygen meter using Method 3A or 3C except that:
 - (i) The span shall be set so that the regulatory limit is between 20 and 50 percent of the span;
 - (ii) A data recorder is not required;
 - (iii) Only two calibration gases are required, a zero and span, and ambient air may be used as the span;
 - (iv) A calibration error check is not required;
 - (v) The allowable sample bias, zero drift, and calibration drift are ± 10 percent.

All higher operating value requests or alternative timeline requests made pursuant to the provisions of this NSPS shall be submitted to the Permitting Authority and written approval shall be obtained prior to implementation. Any changes required to be made to the Title V Air Operation permit and/or issuance of an Air Construction permit shall be made prior to implementation of the above by the Permittee.

Landfill gas extraction wells with approval for higher operating parameter values are stated in Appendix E of this Title V Operation Permit. Approved Alternate Standards for Low Gas Production Wells and Leachate Risers are stated in Appendix C of this Title V Operation Permit.

[40 CFR 60.34c; 40 CFR 60.753(c); EPA Determination dated August 26, 2008]

A.14. LFG Collection System - Methane Concentration @ Surface of Landfill: The collection system shall be operated so that the methane concentration is less than 500 parts per million above background at the surface of the landfill.

To determine if this level is exceeded, the owner or operator shall conduct surface testing around the perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals and where visual observations indicate elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover.

The owner or operator may establish an alternative traversing pattern that ensures equivalent coverage. A surface monitoring design plan shall be developed that includes a topographical map with the monitoring route and 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.

[40 CFR 60.34c; 40 CFR 60.753(d)]

- A.15. LFG Collection and Control System- Inoperable:** In the event the LFG Collection System or LFG Control System is inoperable, the gas mover system shall be shut down and all valves in the collection and control system contributing to venting of the gas to the atmosphere shall be closed within 1 hour.

[40 CFR 60.34c; 40 CFR 60.753(e)]

- A.16. Landfill Gas Collection System -Operation:** The control or treatment system shall be operated at all times when the collected gas is routed to the system.

[40 CFR 60.34c; 40 CFR 60.753(f)]

MONITORING OF OPERATIONS

- A.17. LFG Collection System - Temperature, Pressure, Nitrogen or Oxygen:** A sampling port and a thermometer, other temperature measuring device, or an access port for temperature measurements shall be installed at each wellhead, and:

- (1) The gauge pressure in the gas collection header shall be measured on a monthly basis as provided in Condition A.21.(3); and
- (2) The nitrogen or oxygen concentration in the landfill gas shall be monitored on a monthly basis as provided in Condition A.21.(5); and
- (3) The temperature of the landfill gas shall be on a monthly basis as provided in Condition A.21.(5).

[40 CFR 60.34c and 40 CFR 60.756 (a)]

A.18. LFG Control System - Enclosed Flare: The following equipment shall be calibrated, maintained, and operated according to the manufacturer's specifications:

- (1) 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 degrees C, whichever is greater.
- (2) A device that measures flow to the control device (the Enclosed Combustor and the JEA No. 3 Boiler) The gas flow rate measuring device shall be installed, calibrated, and maintained and records the flow to the control device at least every 15 minutes.

NOTE: The landfill states in the August 5, 2008 response, that the LFG Collection system does not have a bypass line.

[40 CFR 60.34c; 40 CFR 60.756 (b)(1) and (2)(i)]

A.19. Landfill Surface Methane Concentration Monitoring: The owner or operator seeking to demonstrate compliance with Condition A.23. shall monitor surface concentrations of methane according to the instrument specifications and procedures provided in Condition A.24.

Any closed landfill that has no monitored exceedances of the operational standard in three consecutive quarterly monitoring periods may skip to annual monitoring. Any methane reading of 500 ppm or more above background detected during the annual monitoring returns the frequency for that landfill to quarterly monitoring.

The North Landfill currently conducts surface methane concentration monitoring on an annual basis.

[40 CFR 60.34c; 40 CFR 60.756 (f)]

LANDFILL GAS COLLECTION SYSTEM CORRECTIVE ACTION REQUIREMENTS

A.20. Landfill Gas Collection System - Corrective Action. If monitoring demonstrates that the operational requirements in Conditions A.12., A.13. or A.14.,. are not met, corrective action shall be taken as specified in Condition A.21. (3) through (5) or Condition A.23. If corrective actions are taken as specified in Conditions A.21 and A.23., the monitored exceedance is not a violation of the operational requirements.

[40 CFR 60.34c; 40 CFR 60.753(g)]

COMPLIANCE PROVISIONS

A.21. Compliance Determination for Gas Collection System: The specified methods in paragraphs (1) through (6) of this condition shall be used to determine whether the gas collection system is in compliance with Condition A.2.

(1) For the purposes of calculating the maximum expected gas generation flow rate from the landfill to determine compliance with Condition A.2.(1), one of the following equations shall be used. The k and L_o kinetic factors should be those published in the most recent Compilation of Air Pollutant Emission Factors (AP-42) or other site specific values demonstrated to be appropriate and approved by the Administrator. If k has been determined as specified in 40 CFR 60.754(a)(4) the value of k determined 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.

(i) For sites with unknown year-to-year solid waste acceptance rate:

$$Q_m = 2L_o R (e^{-kc} - e^{-kt})$$

where,

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

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

R = average annual acceptance rate, megagrams per year

k = methane generation rate constant, year⁻¹

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

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

(ii) For sites with known year-to-year solid waste acceptance rate:

$$Q_M = \sum_{i=1}^n 2kL_o M_i (e^{-kt_i})$$

where,

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

k = methane generation rate constant, year⁻¹

L_o = 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

- (iii) If a collection and control system has been installed, actual flow data may be used to project the maximum expected gas generation flow rate instead of, or in conjunction with, the equations in paragraphs (1) (i) and (ii) of this Condition.
- (2) For the purposes of determining sufficient density of gas collectors for compliance with Condition A.2.(2), the owner or operator shall design a system of vertical wells, horizontal collectors, or other collection devices, satisfactory to the Administrator, capable of controlling and extracting gas from all portions of the landfill sufficient to meet all operational and performance standards.
- (3) For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with Condition A.2.(3), the owner or operator shall measure gauge pressure in the gas collection header at each individual well, monthly.

If a positive pressure exists, action shall be initiated to correct the exceedance within 5 calendar days, except for the three conditions allowed under Condition A.12.

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

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

An alternative timeline for correcting the exceedance may be submitted to the Administrator for approval.

- (4) N/A the LFG Collection System is beyond the first 180 days after its startup.
- (5) For the purpose of identifying whether excess air infiltration into the landfill is occurring, the owner or operator shall monitor each well monthly for temperature and nitrogen or oxygen as provided in Condition A.13.

If a well exceeds one of these operating parameters, action shall be initiated to correct the exceedance within 5 calendar days.

If correction of the exceedance cannot be achieved within 15 calendar days of the first measurement, the gas collection system shall be expanded to correct the exceedance within 120 days of the initial exceedance.

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

An alternative timeline for correcting the exceedance may be submitted to the Administrator for approval.

- (6) N/A/- the collection system conforms to the specifications stated in § 60.759.

[40 CFR 60.34c; 40 CFR 60.755(a)]

A.22. For purposes of compliance with Condition A.4., each well or design component shall be placed as specified in the approved design plan as provided in 40 CFR 60.752(b)(2)(i). Each well 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:

- (1) N/A - the landfill is not active;
- (2) 2 years or more if closed or at final grade.

[40 CFR 60.34c; 40 CFR 60.755(b)]

A.23. Compliance Determination with Surface Methane Operational Standard: The following procedures shall be used for compliance with the surface methane operational standard as provided in Condition A.14.

- (1) After installation of the collection system, the owner or operator shall monitor surface concentrations of methane along the entire perimeter of the collection area and along a pattern that traverses the landfill at 30 meter intervals (or a site-specific established spacing) for each collection area on a quarterly basis using an organic vapor analyzer, flame ionization detector, or other portable monitor meeting the specifications provided in Condition A.24.
- (2) The background concentration shall be determined 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.
- (3) Surface emission monitoring shall be performed in accordance with section 4.3.1 of Method 21 of appendix A of this part, except that the probe inlet shall be placed within 5 to 10 centimeters of the ground. Monitoring shall be performed during typical meteorological conditions.
- (4) Any reading of 500 parts per million or more above background at any location shall be recorded as a monitored exceedance and the actions specified in paragraphs (4) (i) through (v) of this Condition shall be taken. As long as the specified actions are taken, the exceedance is not a violation of the operational requirements of Condition A.14.
 - (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 paragraph (4)(v) of this Condition shall be taken, and no further monitoring of that location is required until the action specified in paragraph (4)(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 (4) (ii) or (iii) of this Condition shall be re-monitored 1 month from the initial exceedance. If the 1-month re-monitoring 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 (4) (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 timeline for installation may be submitted to the Administrator for approval.
- (5) The owner or operator shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

[40 CFR 60.34c; 40 CFR 60.755(c)]

A.24. Instrumentation Specifications and Procedures for Surface Emissions Monitoring Device: The owner or operator shall comply with the following instrumentation specifications and procedures for surface emission monitoring devices:

- (1) The portable analyzer shall meet the instrument specifications provided in Section 3 of Method 21 of Appendix A of Part 63, except that "methane" shall replace all references to VOC.
- (2) The calibration gas shall be methane, diluted to a nominal concentration of 500 parts per million in air.

(3) To meet the performance evaluation requirements in Section 3.1.3 of Method 21 of Appendix A of Part 63, the instrument evaluation procedures of Section 4.4 of Method 21 of Appendix A of Part 63 shall be used.

(4) The calibration procedures provided in Section 4.2 of Method 21 of Appendix A of Part 63 shall be followed immediately before commencing a surface monitoring survey.

[40 CFR 60.34c; 40 CFR 60.755(d)]

A.25. The provisions of 40 CFR 60 Subpart WWW 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.

[40 CFR 60.34c; 40 CFR 60.755(e)]

LFG COLLECTION AND CONTROL SYSTEM CAPPING/LANDFILL CLOSURE REQUIREMENTS

A.26. Collection & Control System Capping or Closure: The collection and control system may be capped or removed provided that all the conditions of the following paragraphs are met:

(A) The landfill shall be a closed landfill as defined in 40 CFR 60.751 of this subpart. A closure report shall be submitted to the Administrator as provided in Condition A.28.;

(B) The collection and control system shall have been in operation a minimum of 15 years; and

(C) Following the procedures specified in Condition A.37., the calculated NMOC gas produced by the landfill shall be less than 50 megagrams 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.

Closed landfill means a landfill in which solid waste is no longer being placed, and in which no additional solid wastes will be placed without first filing a notification of modification as prescribed under 40 CFR 60.7(a)(4). Once a notification of modification has been filed, and additional solid waste is placed in the landfill, the landfill is no longer closed.

[40 CFR 60.752(b)(2)(v); 40 CFR 60.751]

A.27. MSW Landfill Closure. When a MSW landfill subject to 40 CFR 60 Subpart WWW is closed, the owner or operator is no longer subject to the requirement to maintain a Title V operating permit for the landfill if the landfill is not otherwise subject to the requirements of either part 70 or 71 and if either of the following conditions are met:

- (1) N/A - the landfill is subject to the requirement for a control system under 60.752(b)(2); or
- (2) The owner or operator meets the conditions for control system removal specified in Condition A.26.

[40 CFR 60.752(d)]

REPORTING REQUIREMENTS

A.28. Landfill Closure Notification: If the landfill is permanently closed, a closure report shall be submitted to the Administrator within 30 days of waste acceptance cessation. The Administrator 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 Administrator, no additional wastes may be placed into the landfill without filing a notification of modification as described under 40 CFR 60.7(a)(4).

[40 CFR 60.33c(e)(2)(ii); 40 CFR 60.35c; 40 CFR 60.757(d)]

A.29. LFG Control System -Equipment Removal Report: The owner or operator of a controlled landfill shall submit an equipment removal report to the Administrator 30 days prior to removal or cessation of operation of the control equipment.

- (1) The equipment removal report shall contain all of the following items:
 - (i) A copy of the closure report submitted in accordance with Condition A.28.;
 - (ii) A copy of the initial performance test report demonstrating that the 15 year minimum control period has expired; and
 - (iii) Dated copies of three successive NMOC emission rate reports demonstrating that the landfill is no longer producing 50 megagrams or greater of NMOC per year.
- (2) The Administrator may request such additional information as may be necessary to verify that all of the conditions for removal in Condition A.26. have been met.

[40 CFR 60.35c; 40 CFR 60.757 (e)]

A.30. Collection and Control System Monitoring Report: The owner or operator shall submit to the Administrator annual reports* of the recorded information in paragraphs (1) through (6) of this Condition. For enclosed combustion devices and flares, reportable exceedances are defined under Condition A.33.

- (1) Value and length of time for exceedance of applicable parameters monitored under Conditions A.17., and A.18.
- (2) Description and duration of all periods when the gas stream is diverted from the control device through a bypass line or the indication of bypass flow as specified under Condition A.18.
- (3) Description and duration of all periods when the control device was not operating for a period exceeding 1 hour and length of time the control device was not operating.
- (4) All periods when the collection system was not operating in excess of 5 days.
- (5) The location of each exceedance of the 500 parts per million methane concentration as provided in Condition A.14., and the concentration recorded at each location for which an exceedance was recorded in the previous month.
- (6) The date of installation and the location of each well or collection system expansion added pursuant to Conditions A.21.(3), and A.23.(4).

* As stated in Condition B.8., this annual report is to be submitted every 6 months.

[40 CFR 60.35c; 40 CFR 60.757(f)]

RECORDKEEPING REQUIREMENTS

A.31. The owner or operator of an MSW landfill shall keep for at least 5 years up-to-date, readily accessible, on-site records of the design capacity report which triggered 40 CFR 60.752(b), the current amount of solid waste in-place, and the year-by-year waste acceptance rate. Off-site records may be maintained if they are retrievable within 4 hours. Either paper copy or electronic formats are acceptable.

[40 CFR 60.35c; 40 CFR 60.758 (a)]

A.32. Testing & Monitoring Records: The owner or operator shall keep up-to-date, readily accessible records for the life of the control equipment of the data listed in paragraphs (1) through (4) of this Condition as measured during the initial performance test or compliance determination.

Records of subsequent tests or monitoring shall be maintained for a minimum of 5 years. Records of the control device vendor specifications shall be maintained until removal.

- (1) Where an owner or operator subject to the provisions of this subpart seeks to demonstrate compliance with Condition A.2.:
 - (i) The maximum expected gas generation flow rate as calculated in Condition A.21.(1). The owner or operator may use another method to determine the maximum gas generation flow rate, if the method has been approved by the Administrator.
 - (ii) The density of wells, horizontal collectors, surface collectors, or other gas extraction devices determined using the procedures specified in Condition A.40.(1).
- (2) Where the owner or operator seeks to demonstrate compliance with Condition A.5. through use of the enclosed flare:
 - (i) The average combustion temperature measured at least every 15 minutes and averaged over the same time period of the performance test.
 - (ii) The percent reduction of NMOC determined as specified in Condition A.11. achieved by the control device.
- (3) N/A - Enclosed Flare is not a boiler or process heater. JEA No. 3 Boiler subject to 40 CFR 60.752(b)(2),(iii)(C).
- (4) N/A - control device is not an open flare.

[40 CFR 60.35c; 40 CFR 60.758 (b)]

A.33. Recordkeeping of Operating Parameters: The owner or operator of a controlled landfill shall keep for 5 years up-to-date, readily accessible continuous records of the equipment operating parameters specified to be monitored in Conditions A.17., A.18., and A.19., as well as up-to-date, readily accessible records for periods of operation during which the parameter boundaries established during the most recent performance test are exceeded.

- (1) The following constitute exceedances that shall be recorded and reported under Condition A.30.

- (i) For enclosed combustors (the enclosed flare), all 3-hour periods of operation during which the average combustion temperature was more than 28 °C below the average combustion temperature during the most recent performance test at which compliance with Conditions A.5., A.8.b., and A.11., were determined.
 - (ii) N/A - control device is not a boiler or process heater.
- (2) Each owner or operator subject to the provisions of this subpart shall keep up-to-date, readily accessible continuous records of the indication of flow to the control device specified under Condition A.18.
- (3) N/A - Enclosed Flare is not a boiler or process heater. JEA No. 3 Boiler subject to 40 CFR 60.752(b)(2),(iii)(C).
- (4) N/A - control device is not an open flare.

[40 CFR 60.35c; 40 CFR 60.758(c)]

A.34. LFG Collection System Records: The owner or operator shall keep for the life of the collection system an up-to-date, readily accessible plot map showing each existing and planned collector in the system and providing a unique identification location label for each collector.

- (1) Up-to-date, readily accessible records of the installation date and location of all newly installed collectors as specified in Condition A.22. shall be kept.
- (2) Readily accessible documentation of the nature, date of deposition, amount, and location of asbestos-containing or nondegradable waste excluded from collection as provided in Condition A.40.(3)(i) as well as any nonproductive areas excluded from collection as provided in Condition A.40.(3)(ii) shall be kept.

[40 CFR 60.35c; 40 CFR 60.758 (d)]

A.35. LFG Collection and Control System - Exceedance Records: The owner or operator subject to the provisions of this subpart shall keep for at least 5 years up-to-date, readily accessible records of all collection and control system exceedances of the operational standards in Conditions A.12. through A.16., the reading in the subsequent month whether or not the second reading is an exceedance, and the location of each exceedance.

[40 CFR 60.35c; 40 CFR 60.758 (e)]

TEST METHODS AND PROCEDURES

- A.36. NMOC Emission Rate Calculation.** The NMOC emission rate shall be calculated using either the equation provided in paragraph (i) of this Condition or the equation provided in paragraph (ii) of this Condition.

Both equations may be used if the actual year-to-year solid waste acceptance rate is known, as specified in paragraph (i), for part of the life of the landfill and the actual year-to-year solid waste acceptance rate is unknown, as specified in paragraph (ii), for part of the life of the landfill. The values to be used in both equations are 0.05 per year for k , 170 cubic meters per megagram for L_o , and 4,000 parts per million by volume as hexane for the C_{NMOC} . For landfills located in geographical areas with a thirty year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorologic site, the k value to be used is 0.02 per year.

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

where:

$$M_{NMOC} = \sum_{i=1}^n 2kL_oM_i(e^{-kt}i)(C_{NMOC})(3.6 \times 10^{-9})$$

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

k = methane generation rate constant, year⁻¹

L_o = 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.

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

$$M_{NMOC} = 2L_o R (e^{-kc} - e^{-kt}) (C_{NMOC}) (3.6 \times 10^{-9})$$

Where:

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

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

R = average annual acceptance rate, megagrams per year

k = methane generation rate constant, year⁻¹

t = age of landfill, years

C_{NMOC} = concentration of NMOC, parts per million by volume as hexane
 c = time since closure, years. For active landfill $c = 0$ and $e^{-kc}=1$
 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 a value for R , if documentation of the nature and amount of such wastes is maintained.

[40 CFR 60.34c; 40 CFR 60.754(a)(1)]

A.37. NMOC Emission Rate -Landfill Gas Collection System Removal: The NMOC emission rate shall be calculated for purposes of determining when the system can be removed as provided in Condition A.26., using the following equation:

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

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

- (1) 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 Method 2E of Appendix A of Part 60.
- (2) 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 Method 25C or Method 18 of Appendix A of Part 60. If using Method 18 Appendix A of Part 60, 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 landfill owner or operator shall divide the NMOC concentration from Method 25C of Appendix A of Part 60 by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.
- (3) The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by the Administrator.

[40 CFR 60.754(b)]

A.38. LFG Control System - Enclosed Flare - NMOC Outlet Concentration: Test Method 25, 25C or Method 18 of Appendix A of Part 60 shall be used to determine compliance with 98 weight-percent efficiency or the 20 ppmv outlet concentration level as stated in Condition A.11. A compliance test shall be conducted on a 5-year basis prior to operation permit renewal.

Test Method 3 or 3A shall be used to determine oxygen for correcting the NMOC concentration as hexane to 3 percent.

In cases where the outlet concentration is less than 50 ppm NMOC as carbon (8ppm NMOC as Hexane), Method 25A should be used in place of Method 25.

If using Method 18 of Appendix A of Part 60, 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 following equation shall be used to calculate efficiency:

$$\text{Control Efficiency} = (\text{NMOC}_{\text{in}} - \text{NMOC}_{\text{out}}) / (\text{NMOC}_{\text{in}})$$

Where:

NMOC_{in} = mass of NMOC entering control device

NMOC_{out} = mass of NMOC exiting control device

[40 CFR 60.754(d); Rule 62-297.310(7)(a)3.,F.A.C.]

A.39. NMOC Emission Rate -Landfill Gas Collection System Removal: The NMOC emission rate shall be calculated for purposes of determining when the system can be removed as provided in Condition A.26., using the following equation:

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

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

- (1) 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 Method 2E of Appendix A of Part 60.

- (2) 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 Method 25C or Method 18 of Appendix A of Part 60. If using Method 18 of Appendix A of Part 60, 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 landfill owner or operator shall divide the NMOC concentration from Method 25C of Appendix A of Part 60 by six to convert from C_{NMOC} as carbon to C_{NMOC} as hexane.
- (3) The owner or operator may use another method to determine landfill gas flow rate and NMOC concentration if the method has been approved by the Administrator.

[40 CFR 60.754(b)]

SPECIFICATIONS FOR ACTIVE COLLECTION SYSTEMS

A.40. Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(i) [LFG collection and control system design plan submittal], 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:

- (1) 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.
- (2) The sufficient density of gas collection devices determined in paragraph (1) 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.
- (3) The placement of gas collection devices determined in paragraph (1) of this Condition shall control all gas producing areas, except as provided by paragraphs (3)(i) and (3)(ii) of this Condition.

- (i) Any segregated area of asbestos or nondegradable material may be excluded from collection if documented as provided under Condition A.34. The documentation shall provide the nature, date of deposition, location and amount of asbestos or nondegradable material deposited in the area, and shall be provided to the Administrator upon request.
- (ii) 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 Administrator 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:

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

where,

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

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

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

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

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

C_{NMOC} = concentration of nonmethane organic compounds, parts per million by volume

3.6×10^{-9} = conversion factor

- (iii) The values for k and C_{NMOC} determined in field testing shall be used if field testing has been performed in determining the NMOC emission rate or the radii of influence (this distance from the well center to a point in the landfill where the pressure gradient applied by the blower or compressor approaches zero). If field testing has not been performed, the default values for k , L_o and C_{NMOC} stated below shall be used.
 - a. The applicant stated that Tier II testing was conducted on June 8, 2000, which resulted in a C_{NMOC} of 369 ppm.
 - b. Default values stated in 40 CFR 60.754(a)(1) are 0.05 per year for k , 170 cubic meters per megagram for L_o , and 4,000 parts per million by volume as hexane for the C_{NMOC} . For landfills located in geographical areas with a thirty year annual average precipitation of less than 25 inches, as measured at the nearest representative official meteorologic site, the k value to be used is 0.02 per year. The owner or operator may use other methods to determine the NMOC concentration or a site-specific k as an alternative to the methods

required in 40 CFR 60.754(a)(3) and (a)(4) for Tier II and Tier III testing, if the method has been approved by the Administrator

The mass of nondegradable solid waste contained within the given section may be subtracted from the total mass of the section when estimating emissions provided the nature, location, age, and amount of the nondegradable material is documented as provided in paragraph (3)(i) of this Condition.

[40 CFR 60.759(a)]

A.41. Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(i)(A) shall construct the gas collection devices using the following equipment or procedures:

- (1) 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.
- (2) 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.
- (3) 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.

[40 CFR 60.759(b)]

A.42. Each owner or operator seeking to comply with 40 CFR 60.752(b)(2)(i)(A) shall convey the landfill gas to a control system in compliance with Condition A.5. through the collection header pipe(s). 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 following procedures:

- (1) For existing collection systems, the flow data shall be used to project the maximum flow rate. If no flow data exists, the procedures in paragraph (2) of this Condition shall be used.
- (2) For new collection systems, the maximum flow rate shall be in accordance with Condition A.21.(1).

[40 CFR 60.759(c)]

COMMON CONDITIONS

A.43. This emissions unit is also subject to the applicable General Provisions of 40 CFR 60 Subpart A.

A.44. This emissions unit is also subject to the applicable General Provisions of 40 CFR 63 Subpart A.

Section III. Emissions Unit(s) and Conditions

Subsection B. 40 CFR 63 Subpart AAAA Standards

Emission Unit	Brief Description
001	North Municipal Solid Waste Landfill (Collection System w/Enclosed Flare manufactured by John Zink Co.) Number of NSPS Gas Extraction Wells.....78 Enclosed Flare Stack Height.....40' Exit Diameter.....11.4' Outlet Gas Temperature.....1,566 °F (typically) Maximum Actual Flow Rate.....3,150 acfm Starter Fuel Type.....Propane Maximum Hourly Rate.....22 scf Destruction efficiency.....98% NMOCs

The following specific conditions apply to the emissions unit(s) listed above:

B.1. The facility is no longer required to comply with the requirements of this Subsection when the facility is no longer required to apply controls as specified in Condition A.25., or the Federal plan or EPA approved and effective State plan or tribal plan that implements 40 CFR part 60, subpart Cc, whichever applies to your landfill.

[40 CFR 63.1950]

EMISSION LIMITATION AND REQUIREMENTS

B.2. (a) One of the requirements in paragraph (a)(1) or (2) of this Condition, whichever is applicable shall be met:

- (1) Comply with the requirements of 40 CFR Part 60, Subpart WWW.
- (2) Comply with the requirements of the Federal plan or EPA approved and effective State plan or tribal plan that implements 40 CFR Part 60, Subpart Cc.

[40 CFR 63. 1955(a)]

B.3. The Permittee must comply with the requirements in 40 CFR 63.1960 through 63.1985 and with the general provisions of Part 63 specified in Table 1 of this subpart.

[40 CFR 63.1955(b)]

B.4. Collection and Control System Alternatives. For approval of collection and control systems that include any alternatives to the operational standards, test methods, procedures, compliance measures, monitoring, recordkeeping or reporting provisions, you must follow the procedures in 40 CFR 60.752(b)(2). If alternatives have already been approved under 40 CFR Part 60 Subpart WWW or the Federal plan, or EPA approved and effective State or tribal plan, these alternatives can be used to comply with this subpart, except that all affected sources must comply with the SSM requirements in Subpart A of Part 63 as specified in Table 1 of this Subpart and all affected sources must submit compliance reports every 6 months as specified in Sec. 63.1980(a) and (b), including information on all deviations that occurred during the 6-month reporting period. Deviations for continuous emission monitors or numerical continuous parameter monitors must be determined using a 3-hour monitoring block average.

[40 CFR 63.1955(c)]

COMPLIANCE DEMONSTRATION

B.5. Compliance is determined in the same way it is determined for 40 CFR Part 60, Subpart WWW, including performance testing, monitoring of the collection system, continuous parameter monitoring, and other credible evidence.

In addition, continuous parameter monitoring data, collected under Condition A.18.(1), is used to demonstrate compliance with the operating conditions for control systems. If a deviation occurs, you have failed to meet the control device operating conditions described in this Subsection and have deviated from the requirements of this Subsection.

Finally, you must develop and implement a written SSM plan according to the provisions in 40 CFR 63.6(e)(3). A copy of the SSM plan must be maintained on site.

Failure to write, implement, or maintain a copy of the SSM plan is a deviation from the requirements of this Subsection.

[40 CFR 63.1960]

B.6. Deviations. A deviation is defined in Sec. 63.1990. For the purposes of the landfill monitoring and SSM plan requirements, deviations include the items in paragraphs (a) through (c) of this Condition.

(a) A deviation occurs when the control device operating parameter boundaries described in Condition A.32.(1) are exceeded.

(b) A deviation occurs when 1 hour or more of the hours during the 3-hour block averaging period does not constitute a valid hour of data. A valid hour of data must have measured values for at least three 15-minute monitoring periods within the hour.

(c) A deviation occurs when a SSM plan is not developed, implemented, or maintained on site.

[40 CFR 63.1965]

B.7. 3-hour Block Average Calculation. Averages are calculated in the same way as they are calculated in 40 CFR Part 60, Subpart WWW, except that the data collected during the events listed in paragraphs (a), (b), (c), and (d) of this Condition are not to be included in any average computed under this Subsection:

- (a) Monitoring system breakdowns, repairs, calibration checks, and zero (low-level) and high-level adjustments.
- (b) Startups.
- (c) Shutdowns.
- (d) Malfunctions.

[40 CFR 63.1975]

RECORDKEEPING AND REPORTING REQUIREMENTS

B.8. (a) The Permittee shall keep records and reports as specified in 40 CFR Part 60, Subpart WWW, or in the Federal plan, EPA approved State plan or tribal plan that implements 40 CFR Part 60, Subpart Cc, whichever applies to your landfill, with one exception: The annual report described in Condition A.29. shall be submitted every 6 months.

(b) The Permittee shall also keep records and reports as specified in the General Provisions of 40 CFR Part 60 and Part 63 as shown in Table 1 of Subpart AAAA. Applicable records in the general provisions include items such as SSM plans and the SSM plan reports.

(c) N/A - Landfill does not operate a bioreactor.

(d) N/A - Landfill does not operate a bioreactor.

(e) N/A - Landfill does not operate a bioreactor.

(f) N/A - Landfill does not operate a bioreactor

(g) If any liquids other than leachate is added in a controlled fashion to the waste mass and the facility does not comply with the bioreactor requirements in 40 CFR 63.1947, Condition B.4., and paragraphs (c) through (f) of this Condition, a record of calculations showing that the percent moisture by weight expected in the waste mass to which liquid is added is less than 40 percent shall be kept. The calculation must consider the waste mass, moisture content of the

incoming waste, mass of water added to the waste including leachate recirculation and other liquids addition and precipitation, and the mass of water removed through leachate or other water losses. Moisture level sampling or mass balances calculations can be used. The calculations and the basis of any assumptions must be documented. A record of the calculations shall be kept until liquids addition has been ceased.

(h) If moisture content is calculated to establish the date the bioreactor is required to begin operating the collection and control system under Sec. 63.1947(a)(2) or (c)(2), a record of the calculations including the information specified in paragraph (g) of this Condition shall be kept for 5 years. Within 90 days after the bioreactor achieves 40 percent moisture content, report the results of the calculation, the date the bioreactor achieved 40 percent moisture content by weight, and the date you plan to begin collection and control system operation.

[40 CFR 63.1980]

DEFINITIONS

Terms used in this Subsection are defined in the Clean Air Act, 40 CFR Part 60, Subparts A, Cc, and WWW; 40 CFR Part 62, Subpart GGG, and Subpart A of Part 63, and this Subsection that follows:

Bioreactor means a MSW landfill or portion of a MSW landfill where any liquid other than leachate (leachate includes landfill gas condensate) is added in a controlled fashion into the waste mass (often in combination with recirculating leachate) to reach a minimum average moisture content of at least 40 percent by weight to accelerate or enhance the anaerobic (without oxygen) biodegradation of the waste.

Deviation means any instance in which an affected source subject to this subpart, or an owner or operator of such a source:

(1) Fails to meet any requirement or obligation established by this subpart, including, but not limited to, any emissions limitation (including any operating limit) or work practice standard;

(2) Fails to meet any term or condition that is adopted to implement an applicable requirement in this subpart and that is included in the operating permit for any affected source required to obtain such a permit; or

(3) Fails to meet any emission limitation, (including any operating limit), or work practice standard in this subpart during SSM, regardless of whether or not such failure is permitted by this subpart.

Emissions limitation means any emission limit, opacity limit, operating limit, or visible emissions limit.

EPA approved State plan means a State plan that EPA has approved based on the requirements in 40 CFR part 60, subpart B to implement and enforce 40 CFR part 60, subpart Cc. An approved State plan becomes effective on the date specified in the notice published in the Federal Register announcing EPA's approval.

Federal plan means the EPA plan to implement 40 CFR part 60, subpart Cc for existing MSW landfills located in States and Indian country where State plans or tribal plans are not currently in effect. On the effective date of an EPA approved State or tribal plan, the Federal plan no longer applies. The Federal plan is found at 40 CFR part 62, subpart GGG.

Municipal solid waste landfill or MSW landfill means an entire disposal facility in a contiguous geographical space where household waste is placed in or on land. A municipal solid waste landfill may also receive other types of RCRA Subtitle D wastes (see Sec. 257.2 of this chapter) such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. Portions of a municipal solid waste landfill may be separated by access roads. A municipal solid waste landfill may be publicly or privately owned. A municipal solid waste landfill may be a new municipal solid waste landfill, an existing municipal solid waste landfill, or a lateral expansion.

Tribal plan means a plan submitted by a tribal authority pursuant to 40 CFR parts 9, 35, 49, 50, and 81 to implement and enforce 40 CFR part 60, subpart Cc.

Work practice standard means any design, equipment, work practice, or operational standard, or combination thereof, that is promulgated pursuant to section 112(h) of the Clean Air Act.

[40 CFR 63.1990]

GENERAL PROVISIONS

B.9. This emissions unit is also subject to the applicable requirements in 40 CFR Part 63, Subpart A, as Specified in Table 1 - Applicability of NESHAP General Provisions to Subpart AAAA.

Table 1 to Subpart AAAA of Part 63 – Applicability of NESHAP General Provisions to Subpart AAAA

Part 63 Citation	Description	Explanation
63.1(a)	Applicability: general applicability of NESHAP in this part	Affected sources are already subject to the provisions of paragraphs (a)(10)–(12) through the same provisions under 40 CFR, part 60 subpart A.
63.1(b)	Applicability determination for stationary sources	
63.1(e)	Title V permitting	
63.2	Definitions	

63.4	Prohibited activities and circumvention	Affected sources are already subject to the provisions of paragraph (b) through the same provisions under 40 CFR, part 60 subpart A.
63.5(b)	Requirements for existing, newly constructed, and reconstructed sources	
63.6(e)	Operation and maintenance requirements, startup, shutdown and malfunction plan provisions	
63.6(f)	Compliance with nonopacity emission standards	Affected sources are already subject to the provisions of paragraphs (f)(1) and (2)(i) through the same provisions under 40 CFR, part 60 subpart A.
63.10(b)(2)(i)-(b)(2)(v)	General recordkeeping requirements	
63.10(d)(5)	If actions taken during a startup, shutdown and malfunction plan are consistent with the procedures in the startup, shutdown and malfunction plan, this information shall be included in a semi-annual startup, shutdown and malfunction plan report. Any time an action taken during a startup, shutdown and malfunction plan is not consistent with the startup, shutdown and malfunction plan, the source shall report actions taken within 2 working days after commencing such actions, followed by a letter 7 days after the event	
63.12(a)	These provisions do not preclude the State from adopting and enforcing any standard, limitation, etc., requiring permits, or requiring emissions reductions in excess of those specified	
63.15	Availability of information and confidentiality	

Subsection C. This section addresses the following emissions unit(s).

Emission Unit	Brief Description
001	North Municipal Solid Waste Landfill (Collection System w/Enclosed Flare manufactured by John Zink Co.) Number of NSPS Gas Extraction Wells.....78 Enclosed Flare Stack Height.....40' Exit Diameter.....11.4' Outlet Gas Temperature.....1,566 °F (typically) Maximum Actual Flow Rate.....3,150 acfm Starter Fuel Type.....Propane Maximum Hourly Rate.....22 scf Destruction efficiency.....98% NMOCs

{Permitting note: The emissions unit is regulated under 40 CFR, Part 61, Subpart M, National Emission Standard for Asbestos.

ESSENTIAL POTENTIAL TO EMIT (PTE) PARAMETERS

LANDFILL CLOSURE REQUIREMENTS

C.1. Upon closure, the owner or operator shall comply with all the following conditions for inactive waste disposal sites.

[40 CFR 61.154(g)]

INACTIVE WASTE DISPOSAL SITE STANDARDS:

C.2. The owner or operator shall comply with one of the following:

- (1) Either discharge no visible emissions to the outside air from an inactive waste disposal site subject to this Condition; or

- (2) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material. In desert areas where vegetation would be difficult to maintain, at least 8 additional centimeters (3 inches) of well-graded, nonasbestos crushed rock may be placed on top of the final cover instead of vegetation and maintained to prevent emissions; or
- (3) Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or
- (4) For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent that effectively binds dust to control surface air emissions may be used instead of the methods in paragraphs (1), (2), and (3) of this Condition. Use the agent in the manner and frequency recommended for the particular asbestos tailings by the manufacturer of the dust suppression agent to achieve and maintain dust control. Obtain prior written approval of the Administrator to use other equally effective dust suppression agents. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.

[40 CFR 61.151(a)]

C.3. Warning Signs. Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with paragraph (2) or (3).

- (1) Display warning signs at all entrances and at intervals of 100 m (328 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:
 - (i) Be posted in such a manner and location that a person can easily read the legend; and
 - (ii) Conform to the requirements for 51 cm×36 cm (20&inch;×14&inch;) upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and
 - (iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm (3/4 inch) Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to Your Health	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

- (2) Fence the perimeter of the site in a manner adequate to deter access by the general public.
- (3) When requesting a determination on whether a natural barrier adequately deters public access, supply information enabling the Administrator to determine whether a fence or a natural barrier adequately deters access by the general public.

[40 CFR 61.151(b)]

C.4. Alternative Control Methods. The owner or operator may use an alternative control method that has received prior approval of the Administrator rather than comply with the requirements of Conditions C.2. and C.3.

[40 CFR 61.151(c)]

C.5. Excavation. Notify the Administrator in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site under this section, and follow the procedures specified in the notification. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Administrator at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

- (1) Scheduled starting and completion dates.
- (2) Reason for disturbing the waste.

- (3) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Administrator may require changes in the emission control procedures to be used.
- (4) Location of any temporary storage site and the final disposal site.

[40 CFR 61.151(d)]

C.6. Deed Notation. Within 60 days of a site becoming inactive, record, in accordance with State law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that:

- (1) The land has been used for the disposal of asbestos-containing waste material;
- (2) The survey plot and record of the location and quantity of asbestos-containing waste disposed of within the disposal site required in Condition C.7. have been filed with the Administrator; and
- (3) The site is subject to 40 CFR Part 61, Subpart M.

[40 CFR 61.151(e)]

C.7. Records. Maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area.

[40 CFR 61.154(f)]

COMMON CONDITIONS

C.8. This emissions unit is also subject to the applicable General Provisions of 40 CFR Part 61 Subpart A.