

Facility Name: **Hickory Ridge Sanitary Landfill**

City: Conley

County: DeKalb

AIRS #: 04-13-089-00297

Application #: 16330

Date SIP Application Received: August 10, 2005

Date Title V Application Received: N/A

Permit No: 4953-089-0297-V-02-1

Program	Review Engineers	Review Managers
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TOXICS	n/a	n/a

Introduction

This narrative is being provided to assist the reader in understanding the content of the referenced SIP permit to construct and operate and Section 502(b)(10) change to the Part 70 source. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Sections 391-3-1-.03(1), 391-3-1-.03(2), and 391-3-1-.03(10). of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The following narrative is designed to accompany the permit and is presented in the same general order as the permit amendment. This narrative is intended only as an adjunct for the reviewer and has no legal standing.

I. Facility Description

A. Existing Permits

Table 1 below lists the current Title V permit, all administrative amendments and minor and significant modifications to that permit, and any 502(b)(10) changes. Comments are listed in Table 2 below.

Table 1: Current Title V Permit and Amendments

Permit/Amendment Number	Date of Issuance	Comments	
		Yes	No
4953-089-0297-V-02-0	August 17, 2005	X	

Table 2: Comments on Specific Permits

Permit Number	Comments
4953-089-0297-V-02-0	Title V Renewal

B. Regulatory Status

1. PSD/NSR/RACT

PSD status: Major

The Title V site consisting of a landfill and a proposed power station is a major source under the PSD regulations of 40 CFR 52.21. Potential emissions of carbon monoxide (CO) exceed the 250 ton per year PSD major source threshold. Potential emissions of all other pollutants are below 250 tons per year. Neither the landfill nor the power station is included as one of the 28 listed source categories that have a 100 tpy PSD major source threshold as per 52.21. Fugitive emissions are not counted toward the PSD major source threshold.

NSR status: Major

Non-attainment NSR regulations apply to sources located in the 13-county Atlanta non-attainment area (including DeKalb County) that have potential emissions of either NOx or VOC equal to or exceeding 25 tons per year.

Potential VOC emissions from the landfill and proposed power station will be below 25 tons per year. The anticipated non-fugitive VOC emissions (those emitted from the existing landfill flare plus those emitted from the proposed engines) will total approximately 8 tons per year.

Potential NOx emissions from the landfill and proposed power station will be greater than 25 tons per year.

NOx emissions from the three proposed engines at the power plant are effectively limited to 22.5 tons per year, while potential NOx emissions from the open flare(s) will be approximately 16.2 tons per year. This site is therefore a major source under nonattainment NSR because the site total Potential NOx emissions are 38.7 tons per year (tpy).

Note: The flare NOx emission estimate is derived from LandGEM methane generation rates. At the time the generators were permitted, EDI predicted that the methane generation rate would be low enough that the flare(s) would not have to operate when the engines are operating; if the flare(s) is used only as backup when the engines are down, NOx emissions from the site will be lower than 25 tons per year. However, since that time, the generation of LFG has dramatically increased, so that it is now expected that LFG will be in excess of that needed by the three engines and the flare(s) will have to operate even while the engines operate. If the engines are never constructed, the NOx potential to emit will be less than 25 tpy.

Permit No. 4911-089-0323-V-01-0 limits NOx to 36.6 ppm @ 15% O2 on each engine, which is equivalent to 22.5 tpy for the entire power station. This limit was proposed by the applicant and included in the permit to avoid NSR review at the time the generators were permitted to assure that the increase in NOx would be less than 25 tons per year.

2. Title V Major Source Status by Pollutant

Table 3: Title V Major Source Status

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility's Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	✓			✓
PM ₁₀	✓			✓
SO ₂	✓			✓
VOC	✓			✓
NO _x	✓	✓		
CO	✓	✓		
TRS	✓			✓
H ₂ S	✓			✓
Individual	✓			✓
Total HAPs	✓			✓

II. Proposed Modification

A. Description of Modification

Hickory Ridge Sanitary Landfill submitted an application to upgrade the existing blowers and stack on the primary

open flare. The letter dated August 5, 2005, was assigned Application No. 16330. This modification qualifies as a 502(b)(10) change. The facility submitted the required 502(b)(10) notification to EPD and EPA in a letter dated August 11, 2005. The current flare capacity is 2000 cfm with a proposed capacity of 2485 cfm. The upgrade of the primary open flare will not affect the existing processes.

B. Emissions Change

Potential emissions from the proposed upgrade of the primary flare (rated at 2485scfm) are estimated as follows:

Assumptions

Upgraded Flare capacity = 2485 ACFM landfill gas (1243 ACFM methane)

Old Flare capacity = 2000ACFM landfill gas (1000 ACFM methane)

NOx Emissions

NOx emission factor (from AP-42 Section 2.4) is 40 lb/mmcf methane

Upgraded Flare:

$E \text{ (lb/hr)} = 40 \text{ lb/mmcf} \times 1243 \text{ SCFM} \times 60 / 1,000,000 = 2.9 \text{ lb/hr (13.1 tpy)}$

Existing Flare:

$E \text{ (lb/hr)} = 40 \text{ lb/mmcf} \times 1000 \text{ SCFM} \times 60 / 1,000,000 = 2.4 \text{ lb/hr (10.5 tpy)}$

Potential Emissions Increase: $13.1 - 10.5 = 2.6 \text{ tpy}$

CO Emissions

CO emission factor (from AP-42 Section 2.4) is 750 lb/mmcf (12,000 kg/mmcm) methane

Upgraded Flare:

$E \text{ (lb/hr)} = 750 \text{ lb/mmcf} \times 1243 \text{ SCFM} \times 60 / 1,000,000 = 56 \text{ lb/hr (245 tpy)}$

Existing Flare:

$E \text{ (lb/hr)} = 750 \text{ lb/mmcf} \times 1000 \text{ SCFM} \times 60 / 1,000,000 = 45 \text{ lb/hr (197.1 tpy)}$

Potential Emissions Increase: $245 - 197.1 = 47.9 \text{ tpy}$

VOC Emissions

Default value for NMOC concentration in landfill gas = 595 ppmv (from AP-42 Section 2.4)

MW of NMOC = 86.2

Concentration in mg/m³ = ppmv x MW / 24.5 = 2100 mg/m³

VOC = 39% of NMOC (AP-42 Section 2.4 default value)

Uncontrolled VOC = 2100 mg/m³ x 7.1 mmcm/yr x 0.39 = 5814.9 kg/yr (6.4 tpy)

Destruction efficiency = 98%

Controlled VOC emission rate = 6.4 tpy x (1-0.98) = 0.13 tpy

Table 4: Emissions Change Due to Modification

Pollutant	Is the Pollutant Emitted?	Net Actual Emissions Increase (Decrease) (tpy)	Net Potential Emissions Increase (Decrease) (tpy)
PM	-	-	-
PM ₁₀	-	-	-
SO ₂	-	-	-
VOC	y	0.13	0.13
NO _x	y	2.6	2.6
CO	y	47.9	47.9
TRS	-	-	-
H ₂ S	-	-	-
Individual	-	-	-
Total HAPs	-	-	-

C. Title I Modification

- PSD/NSR Applicability

This change is not subject to PSD or NSR. The net emissions increases do not exceed the PSD significant modification thresholds. The net NO_x emissions increase from the replacement and upgrade of the primary flare is less than the 25 tons per year (tpy) per 5 years de minimis increase threshold, so this modification is not subject to NSR.

- NSPS Modification

The upgrade of the primary flare is not an NSPS modification. The landfill is currently subject to 40 CFR Part 60 Subpart WWW.

- NESHAP Modification

This modification is not subject to any NESHAP.

III. Facility Wide Requirements

A. Emission and Operating Caps

No emission and operating caps have been added.

B. Applicable Rules and Regulations

There are no changes in the applicable rules and regulations.

C. Compliance Status

No noncompliance issues have been identified by the facility.

D. Operational Flexibility

No operational flexibility has been requested by the facility.

E. Permit Conditions

No new conditions.

IV. Regulated Equipment Requirements

A. Brief Process Description

Hickory Ridge Sanitary Landfill uses open flare(s) to control NMOC emissions generated by the landfill. This modification will upgrade the blowers and stack on the primary flare. The existing flare capacity is 2000 cfm; the upgraded capacity will be 2485 cfm. The facility is also authorized to destroy NMOC emissions by providing them as fuel for the three internal combustion (IC) engines at the third-party power generation station. These engines have not yet been constructed.

B. Equipment List for the New or Modified Process(es)

Not Applicable.

C. Equipment & Rule Applicability

- Emission and Operating Caps – No emission or operating caps added.
- Applicable Rules and Regulations – No changes.

D. Compliance Status

No noncompliance issues have been identified by the facility.

E. Operational Flexibility

No operational flexibility has been requested by the facility.

F. Permit Conditions

No new conditions.

V. Testing Requirements (with Associated Record Keeping and Reporting)

New Condition 4.2.3 requires that the upgraded primary open flare undergo initial performance testing in accordance with 40 CFR 60.18 as required by 40 CFR 60 Subpart WWW. This testing involves opacity testing of the flare, exit velocity of the landfill gas at the flare outlet, and the landfill gas heating value.

VI. Monitoring Requirements (with Associated Record Keeping and Reporting)

No new requirements added.

VII. Other Record Keeping and Reporting Requirements

No new requirements added.

VIII. Specific Requirements

New Condition 7.14.1 allows the Division to modify the permit if comments from the public and EPA are received prior to September 29, 2005, when the Public Advisory expires.