Facility Name: **MAS Georgia LFG, LLC (Oak Grove)**
City: Winder
County: Barrow
AIRS #: 04-13-013-00083

Application #: TV-825064
Date Application Received: March 5, 2024
Permit No: 4911-013-0083-V-05-0

Program	Review Engineers	Review Managers
SSPP	Alexander Lagunas	Cynthia Dorrough
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Toxics	N/A	N/A
Permitting Program Manager		Steve Allison

Introduction

This narrative is being provided to assist the reader in understanding the content of referenced operating permit. Complex issues and unusual items are explained here in simpler terms and/or greater detail than is sometimes possible in the actual permit. The permit is being issued pursuant to: (1) Georgia Air Quality Act, O.C.G.A § 12-9-1, et seq. and (2) Georgia Rules for Air Quality Control, Chapter 391-3-1, and (3) Title V of the Clean Air Act. Section 391-3-1-.03(10) of the Georgia Rules for Air Quality Control incorporates requirements of Part 70 of Title 40 of the Code of Federal Regulations promulgated pursuant to the Federal Clean Air Act. The narrative is intended as an adjunct for the reviewer and to provide information only. It has no legal standing. Any revisions made to the permit in response to comments received during the public participation and EPA review process will be described in an addendum to this narrative.

I. Facility Description

A. Facility Identification

1. Facility Name: MAS Georgia LFG, LLC (Oak Grove)

2. Parent/Holding Company Name

   Cube District Energy

3. Previous and/or Other Name(s)

   None known.

4. Facility Location

   967 Carl Bethlehem Road
   Winder, Georgia 30680

5. Attainment, Non-attainment Area Location, or Contributing Area

   The facility is located in Barrow County, which is currently in attainment for all air pollutants.

B. Site Determination

MAS Georgia LFG, LLC (Oak Grove) (hereafter the facility) is located at Oak Grove Sanitary/Speedway Landfill (AIRS No. 013-00068, which are adjacent landfills located in Barrow County, Georgia. Oak Grove Sanitary Landfill is an open landfill, and Speedway Landfill is closed. Both landfills are owned by Republic Services of Georgia Limited Partnership. Oak Grove Sanitary Landfill is the only source of landfill gas (LFG) for the power facility is Oak Grove Landfill.

The operation of the facility is managed separately from the landfill. There is no connection between the owner of the facility (MAS Georgia LFG, LLC) and the owner of the landfill (Republic Servies of Georgia Limited Partnership). Because the facility is located at the landfill and the landfill is the only source of landfill gas (LFG) for the facility, the facility and the landfill are considered one site for Title I, Title V, and PSD purposes.

C. Existing Permits

Table 1 below lists all current Title V permits, all amendments, 502(b)(10) changes, and off-permit changes, issued to the facility, based on a comparative review of form A.6, Current Permits, of the Title V application and the "Permit" file(s) on the facility found in the Air Branch office.

Table 1: List of Current Permits, Amendments, and Off-Permit Changes

Permit Number and/or Off-Permit Change	Date of Issuance/ Effectiveness	Purpose of Issuance
4911-013-0083-V-03-0	September 5, 2019	Title V renewal

4911-013-0083-V-03-1	October 14, 2022	502(b)10 amendment for a like-kind replacement of IC Engine 2
4911-013-0083-V-04-0	January 14, 2022	AA for an ownership change

D. Process Description

1. SIC Codes(s)

4911

The SIC Code(s) identified above were assigned by EPD's Air Protection Branch for purposes pursuant to the Georgia Air Quality Act and related administrative purposes only and are not intended to be used for any other purpose. Assignment of SIC Codes by EPD's Air Protection Branch for these purposes does not prohibit the facility from using these or different SIC Codes for other regulatory and non-regulatory purposes.

Should the reference(s) to SIC Code(s) in any narratives or narrative addendum previously issued for the Title V permit for this facility conflict with the revised language herein, the language herein shall control; provided, however, language in previously issued narratives that does not expressly reference SIC Code(s) shall not be affected.

2. Description of Product(s)

The facility generates electricity for sale.

3. Overall Facility Process Description

MAS Georgia LFG, LLC (Oak Grove) is a 7.2 MW landfill gas to energy (LFGTE) plant that is located at the Oak Grove Sanitary Landfill, which is currently an operating landfill subject to 40 CFR 62 Subpart OOO and 40 CFR 63 Subpart AAAA. LFG is produced from the decomposition of deposited waste collected using an active gas collection and control system (GCCS). The LFGTE plant consists of an LFG Pretreatment system (Source Code: PTS1) with a thermal oxidizer (Source Code: TO01) to control off-gas and three (3) 2.4 MW internal combustion engines (Source Codes: IC01, IC02, and IC03), which use treated LFG and natural gas blend as fuel. Emissions from each engine are controlled by an oxidation catalyst system, and NO_X emissions are minimized using a LEANOX lean burn combustion system on all engines.

A utility flare, owned and operated by the Oak Grove Sanitary Landfill, is the back-up control device when the engines are offline and will combust LFG in excess of that which the engines are capable of combusting.

4. Overall Process Flow Diagram

The facility provided a process flow diagram in their Title V permit application.

E. Regulatory Status

1. PSD/NSR

The combination of MAS Georgia LFG, LLC (Oak Grove) and Oak Grove Sanitary Landfill is a major source under PSD regulations. Emissions of CO exceed the major threshold of 250 tons per year (tpy) while emissions of all other criteria pollutants are below the threshold. Landfills and LFGTE facilities are not included in the list of 28 source categories that have a 100 tpy threshold. The site has not been through PSD review.

The LFGTE facility and the landfill have accepted emission limits to become a synthetic minor under PSD. CO emissions are capped to less than 250 tpy while all other criteria pollutants remain below the major source threshold. These emission limits were negotiated between the LFGTE facility and the landfill.

2. Title V Major Source Status by Pollutant

Table 2: 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	Y			✓
PM_{10}	Y			✓
$PM_{2.5}$	Y			✓
SO_2	Y			✓
VOC	Y			✓
NO_x	Y	✓		
CO	Y	✓		
TRS	N			
H_2S	N			
Individual HAP	Y			✓
Total HAPs	Y			✓

3. MACT Standards

The Landfill MACT, 40 CFR 63 Subpart AAAA, is applicable to municipal solid waste landfills that have accepted waste since November 8, 1987 or have additional capacity for waste deposition and meets one of the following criteria: is a major source of HAP emissions, is collocated with a major source of HAP emissions, or is an area source of HAP emissions that has a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year NMOC.

The total HAP emissions from the combined facilities of MAS Georgia LFG, LLC (Oak Grove) and the Oak Grove Landfill is less than the major threshold of 25 tpy and thus are an area source of HAP emissions. Because the combined site is an area source of HAP emissions and the landfill

has a design capacity equal to or greater than 2.5 million megagrams and 2.5 cubic meters and has estimated uncontrolled emission equal to or greater than 50 megagrams per year NMOC, the facility is subject to the Landfill MACT.

The Division calculated PTE for formaldehyde emissions using North Carolina Division of Air Quality emission factor of $1.1x10^{-3}$ lb/bhp-hr based on performance test at similar facilities. The engine manufacturer does not guarantee formaldehyde reduction in the oxidation catalyst when burning biogas or landfill gas. Using the $1.1x10^{-3}$ lb/bhp-hr emission factor for the three 3,346 bhp-hr engines, the Division calculated uncontrolled formaldehyde emission to be in excess of 10 tpy. However, MAS Georgia contends their engines emit far less formaldehyde and are a minor source of HAP emissions. In order to ensure the facility is a true minor source of HAP emissions, the facility was required to test one engine to demonstrate the site is below the major source threshold. Testing was performed on March 3, 2020. The test demonstrated an average emission rate of 2.6 lb/hr or 1.23 tpy per each engine, for a PTE of 3.68 tons of formaldehyde, which is below the major source thresholds for HAP emissions. The facility is a true minor source of HAP emissions.

The facility is subject to 40 CFR 63 Subpart ZZZZ – "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines."

4. Program Applicability (AIRS Program Codes)

Program Code	Applicable (y/n)
Program Code 6 - PSD	No
Program Code 8 – Part 61 NESHAP	No
Program Code 9 - NSPS	Yes
Program Code M – Part 63 NESHAP	Yes
Program Code V – Title V	Yes

Regulatory Analysis

II. Facility Wide Requirements

A. Emission and Operating Caps:

None applicable.

B. Applicable Rules and Regulations

40 CFR 62 Subpart OOO – "Federal Plan Requirements for Municipal Solid Waste Landfills that Commenced Construction On or Before July 17, 2014 and Have Not Been Modified or Reconstructed Since July 17, 2014" and Georgia Rules 391-3-1-.02(2)(ggg) – "Existing Municipal Solid Waste Landfills"

Applicable.

The facility is collocated with Oak Grove Sanitary/Speedway Landfill, which has a capacity in excess of 2.5 million megagrams by mass and 2.5 million cubic meters by volume, accepted waste after November 8, 1987, has not commenced construction, reconstruction, or modification after July 17, 2014, and has an NMOC emission rate greater than 344 Mg/yr. As a result, the facility is subject to this subpart. The facility was previously subjected to 40 CFR 60 Subpart WWW.

The facility is subject to this subpart until Georgia Rule 391-3-1-.02(2)(ggg) – "Existing Municipal Solid Waste Landfills" becomes an EPA-approved and currently effective state plan implementing 40 CFR 60 Subpart Cf – "Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills."

40 CFR 63 Subpart AAAA – "National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills"

Applicable.

The facility is collocated with Oak Grove Sanitary/Speedway Landfill, which has accepted waste since November 8, 1987, and is an area source of HAP emissions with a design capacity equal to or greater than 2.5 million megagrams and 2.5 million cubic meters and has estimated uncontrolled emissions equal to or greater than 50 megagrams per year NMOC. As a result, the facility is subject to this subpart.

C. Compliance Status

The facility did not indicate any non-compliance issue in its application.

D. Permit Conditions

Condition 2.2.1 establishes the applicability of 40 CFR 62 Subpart A and 40 CFR 62 Subpart OOO until Georgia Rule 391-3-1-.02(2)(ggg) is approved. *New to permit, updated from 40 CFR 60 Subpart WWW.*

Condition 2.2.2 establishes the applicability of 40 CFR 63 Subpart A and 40 CFR 63 Subpart AAAA.

Condition 2.3.1 establishes the applicability of Georgia Rule 391-3-1-.02(2)(ggg) upon approval. *New to permit, updated from 40 CFR 60 Subpart WWW.*

III. Regulated Equipment Requirements

A. Equipment List for the Process

Emission Units		Applicable Requirements/Standards	Air Pollution Control Devices	
ID No.	Description		ID No.	Description
IC01	IC Engine 1 GE Jenbacher J616 GS-F22 Spark-ignition four-stroke lean-burn, rated at 2.176 MWe	40 CFR 60 Subpart A 40 CFR 60 Subpart JJJJ 40 CFR 63 Subpart A 40 CFR 63 Subpart ZZZZ 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 391-3-1-.02(2)(mmm)	CAT1	Oxidation Catalyst System
IC02	IC Engine 2 GE Jenbacher J616 GS-F22 Spark-ignition four-stroke lean-burn, rated at 2.176 MWe	40 CFR 60 Subpart A 40 CFR 60 Subpart JJJJ 40 CFR 63 Subpart A 40 CFR 63 Subpart ZZZZ 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 391-3-1-.02(2)(mmm)	CAT2	Oxidation Catalyst System
IC03	IC Engine 3 GE Jenbacher J616 GS-F22 Spark-ignition four-stroke lean-burn, rated at 2.176 MWe	40 CFR 60 Subpart A 40 CFR 60 Subpart JJJJ 40 CFR 63 Subpart A 40 CFR 63 Subpart ZZZZ 391-3-1-.02(2)(b) 391-3-1-.02(2)(g) 391-3-1-.02(2)(mmm)	CAT3	Oxidation Catalyst System
PTS1	LFG Pretreatment System	391-3-1-.02(2)(b) 391-3-1-.02(2)(g)	TO01	Thermal Oxidizer

B. Equipment & Rule Applicability

Emission and Operating Caps:

The combined site of the LFGTE facility and the landfill is restricted to emissions below 250 tpy to avoid PSD. The facility has agreed to limit its NO_X to 98.4 tons per year, CO emissions to 93.4 tons per year, and VOC emissions to 22.2 tons per year.

Rules and Regulations Assessment:

40 CFR 60 Subpart JJJJ – "Standards of Performance for Stationary Spark Ignition Internal Combustion Engines"

Applicable to the IC Engines (Source Codes: IC01, IC02, and IC03).

This rule applies to spark ignition internal combustion engines which commenced construction after June 12, 2006.

The IC Engines were constructed after June 12, 2006 and thus are subject to this subpart.

They are subject to the following requirements:

- Emission standards located in Table 1 of this subpart. Since the engines burn a blend of natural gas and LFG, the natural gas standards are used since they are more stringent than the LFG standards.
- Performance testing to demonstrate compliance for NO_X, CO, and VOC
- Recordkeeping

40 CFR 62 Subpart OOO and *40 CFR 63 Subpart AAAA*

Applicable to the LFG Pretreatment System (Source Code: PTS1).

See Section II.B for applicability.

The facility is required to operate the LFG Pretreatment System whenever gas is directed to it and at all times that LFG is being supplied to the IC Engines as fuel. A site-specific treatment monitoring plan is required.

Georgia Rules 391-3-1-.02(2)(b) – "Visible Emissions"

Applicable to the IC Engines (Source Codes: IC01, IC02, and IC03) and the Thermal Oxidizer (Source Code: TO01).

This rule applies to sources subject to other emission limitations. The IC Engines and the Thermal Oxidizer are also subject to Rule (g) and thus subject to this rule. Visible emissions are limited to an opacity of which is not equal to or greater than (40) percent.

Georgia Rules 391-1-.02(2)(g) – "Sulfur Dioxide"

Applicable to the IC Engines (Source Codes: IC01, IC02, and IC03) and the Thermal Oxidizer (Source Code: TO01).

This rule applies to fuel-burning sources. The IC Engines and the Thermal Oxidizer fire natural gas and thus are subject to this rule. Sulfur fuel content is limited to no more than 2.5 percent sulfur.

Georgia Rules 391-3-1-.02(2)(mmm) – "NO_X Emissions from Stationary Gas Turbines and Stationary Engines used to Generate Electricity"

Applicable to the IC Engines (Source Codes: IC01, IC02, and IC03).

This rule applies to stationary engines used to generate electricity located in a listed county. The IC Engines are stationary engines used to generate electricity located in Barrow County, which is one of the listed counties, and thus subject to this rule. NO_X emissions are limited to 80 ppm at 15% O_2, dry basis during the ozone season because they were installed after April 1, 2000. Annual monitoring for NO_X is required.

C. Permit Conditions

Conditions have been retained from Air Permit No. 4911-013-0083-V-03-0, its amendments, and Air Permit No. 4911-013-0083-V-04-0, excepted as noted.

Condition 3.2.1 sets emissions limitations for NO_X, CO, and VOC to the IC Engines (Source Codes: IC01, IC02, and IC03) and the Thermal Oxidizer (Source Code: TO01), for PSD Avoidance.

Condition 3.3.1 establishes the applicability of 40 CFR 60 Subpart A and 40 CFR 60 Subpart JJJJ to the IC Engines (Source Codes: IC01, IC02, and IC03).

Condition 3.3.2 sets rate of emission standards for NO_X, CO, and VOC for the IC Engines (Source Codes: IC01, IC02, and IC03), per 40 CFR 60 Subpart JJJJ.

Condition 3.3.3 establishes the applicability of 40 CFR 63 Subpart A and 40 CFR 63 Subpart ZZZZ.

Condition 3.3.4 requires the LFG Pretreatment System (Source Code: PTS1) to be operated whenever gas is directed to it and whenever the IC Engines (Source Codes: IC01, IC02, and IC03) use LFG as fuel. *Updated from 40 CFR 60 Subpart WWW to 40 CFR 62 Subpart OOO and 40 CFR 63 Subpart AAAA.*

Condition 3.4.1 set a visible emission limit for the IC Engines (Source Codes: IC01, IC02, and IC03) and the Thermal Oxidizer (Source Code: TO01), per Rule (b).

Condition 3.4.2 sets a sulfur fuel content limit for the IC Engines (Source Codes: IC01, IC02, and IC03) and the Thermal Oxidizer (Source Code: TO01), per Rule (g).

Condition 3.4.3 limits emissions of NO_X from the IC Engines (Source Codes: IC01, IC02, and IC03), per Rule (mmm).

Condition 3.5.l requires the use of the Thermal Oxidizer (Source Code: TO01) with the LFG Pretreatment System (Source Code: PTS1).

Condition 3.5.2 sets an operational limitation on Thermal Oxidizer (Source Code: TO01).

Condition 3.5.3 requires the use of the oxidation catalyst system (Source Codes: CAT1, CAT2, and CAT3), per Part 63 “Major Source” Avoidance.

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

A. General Testing Requirements

The permit includes a requirement that the Permittee conduct performance testing on any specified emission unit when directed by the Division. Additionally, a written notification of any performance test(s) is required 30 days (or sixty (60) days for tests required by 40 CFR Part 63) prior to the date of the test(s) and a test plan is required to be submitted with the test notification. Test methods and procedures for determining compliance with applicable emission limitations are listed and test results are required to be submitted to the Division within 60 days of completion of the testing.

B. Specific Testing Requirements

Conditions have been retained from Air Permit No. 4911-013-0083-V-03-0, its amendments, and Air Permit No. 4911-013-0083-V-04-0, excepted as noted.

Condition 4.2.1 requires performance tests for NO_X, CO, and VOC emissions from the IC Engines (Source Codes: IC01, IC02, and IC03) to demonstrate compliance with Conditions 3.2.1 and 3.3.2, per PSD Avoidance and 40 CFR 60 Subpart JJJJ.

Condition 4.2.2 lists the criteria for the performance tests for NO_X, CO, and VOC emissions, per 40 CFR 60 Subpart JJJJ.

Condition 4.2.3 requires the determination of emission factors in g/hp-hr during the performance tests required in Condition 4.2.1 to demonstrate compliance with Condition 3.3.2.

V. Monitoring Requirements

A. General Monitoring Requirements

Condition 5.1.1 requires that all continuous monitoring systems required by the Division be operated continuously except during monitoring system breakdowns and repairs. Monitoring system response during quality assurance activities is required to be measured and recorded. Maintenance or repair is required to be conducted in an expeditious manner.

B. Specific Monitoring Requirements

Conditions have been retained from Air Permit No. 4911-013-0083-V-03-0, its amendments, and Air Permit No. 4911-013-0083-V-04-0, excepted as noted.

Condition 5.2.1 requires the monitoring of the following parameters:

- Gas flow rate of gas to the treatment system, per 40 CFR 62 Subpart OOO and 40 CFR 63 Subpart AAAA,
- Temperature in the combustion zone of the thermal oxidizer (Source Code: TO01),
- Inlet temperature on the oxidation catalytic systems of the IC Engines (Source Codes: IC01, IC02, and IC03),
- Non-resettable hour meter on the IC Engines (Source Codes: IC01, IC02, and IC03).

Condition 5.2.2 requires annual monitoring of NO_X emissions from the IC Engines (Source Codes: IC01, IC02, and IC03) and lists the criteria, per Rule (mmm).

Condition 5.2.3 requires monitoring of the monthly hours of operation of the Thermal Oxidizer (Source Code: TO01).

C. Compliance Assurance Monitoring (CAM)

Not applicable.

VI. Record Keeping and Reporting Requirements

A. General Record Keeping and Reporting Requirements

The Permit contains general requirements for the maintenance of all records for a period of five years following the date of entry and requires the prompt reporting of all information related to deviations from the applicable requirements. Records, including identification of any excess emissions, exceedances, or excursions from the applicable monitoring triggers, the cause of such occurrence, and the corrective action taken, are required to be kept by the Permittee and reporting is required on a semiannual basis.

B. Specific Record Keeping and Reporting Requirements

Conditions have been retained from Air Permit No. 4911-013-0083-V-03-0, its amendments and Air Permit No. 4911-013-0083-V-04-0.

Condition 6.1.8 has been removed because Georgia Rule 391-3-1-.02(6)(1)(4), which required a statement of actual emissions, no longer exists.

Condition 6.2.1 requires records of notification, maintenance on the IC Engines (Source Codes: IC01, IC02, and IC03), and documentation that each meets the emission standards, per 40 CFR 60 Subpart JJJJ.

Condition 6.2.2 calculates the monthly emissions from the IC Engines (Source Codes: IC01, IC02, and IC03) and the Thermal Oxidizer (Source Code: TO01).

Condition 6.2.3 calculates the 12-consecutive month total using data from Condition 6.2.2 to demonstrate compliance with Condition 3.2.1.

Condition 6.2.4 requires bypass records and a site-specific treatment monitoring system for the LFG Pretreatment System (Source Code: PTS1), per 40 CFR 62 Subpart OOO and 40 CFR 63 Subpart AAAA. *New to permit*.

VII. Specific Requirements

A. Operational Flexibility

- Not applicable.

B. Alternative Requirements

- Not applicable.

C. Insignificant Activities

See Permit Application on GEOS website.
See Attachment B of the permit

D. Temporary Sources

- Not applicable.

E. Short-Term Activities

- Not applicable.

F. Compliance Schedule/Progress Reports

- Not applicable.

G. Emissions Trading

- Not applicable.

H. Acid Rain Requirements

- Not applicable.

I. Stratospheric Ozone Protection Requirements

- Not applicable.

J. Pollution Prevention

- Not applicable.

K. Specific Conditions

- Not applicable.

VIII. General Provisions

Generic provisions have been included in this permit to address the requirements in 40 CFR Part 70 that apply to all Title V sources, and the requirements in Chapter 391-3-1 of the Georgia Rules for Air Quality Control that apply to all stationary sources of air pollution.

Template Condition 8.14.1 was updated in September 2011 to change the default submittal deadline for Annual Compliance Certifications to February 28.

Template Condition Section 8.27 was updated in August 2014 to include more detailed, clear requirements for emergency generator engines currently exempt from SIP permitting and considered insignificant sources in the Title V permit.

Template Condition Section 8.28 was updated in August 2014 to more clearly define the applicability of the Boiler MACT or GACT for major or minor sources of HAP.

Addendum to Narrative

The 30-day public review started on month day, year and ended on month day, year. Comments were/were not received by the Division.

//If comments were received, state the commenter, the date the comments were received in the above paragraph. All explanations of any changes should be addressed below.//