

Application Review

Issue Date: **xx/xx/2022**

Region: Winston-Salem Regional Office
County: Surry
NC Facility ID: 8600177
Inspector's Name: -----
Date of Last Inspection: N/A
Compliance Code: N/A

Facility Data			Permit Applicability (this application only)				
<p>Applicant (Facility's Name): Surry County Landfill</p> <p>Facility Address: Surry County Landfill 237 Landfill Road Mount Airy, NC 27030</p> <p>SIC: 4953 / Refuse Systems NAICS: 562212 / Solid Waste Landfill</p> <p>Facility Classification: Before: Permit/Registration Pending After: Title V Fee Classification: Before: N/A After: Title V</p>			<p>SIP: 15A NCAC 02D .0524, .1110, and .1806 NSPS: Subparts XXX and IIII NESHAP/MACT: 40 CFR 61 Subpart M, GACT ZZZZ and CCCCCC</p> <p>PSD: N/A PSD Avoidance: N/A NC Toxics: Exempt per 15A NCAC 02Q .0702(a)(27)(A) 112(r): N/A Other: N/A</p>				
Contact Data			Application Data				
Facility Contact	Authorized Contact	Technical Contact	<p>Application Number: 8600177.22A Date Received: 08/26/2019 Application Type: New Permit Application Schedule: TV-1st Time Existing Permit Data Existing Permit Number: N/A Existing Permit Issue Date: N/A Existing Permit Expiration Date: N/A</p>				
Jessica Montgomery Public Works Director/County Engineer PO Box 342 Dobson, NC 27017 (336) 401-8376 montgomeryj@co.surry.nc.us	Chris Knopf County Manager PO Box 1467 Dobson, NC 27017 (336) 401-8201 knopfc@co.surry.nc.us	Jessica Montgomery Public Works Director/County Engineer PO Box 342 Dobson, NC 27017 (336) 401-8376 montgomeryj@co.surry.nc.us					
Total Actual emissions in TONS/YEAR:							
CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	0.4000	3.90	4.70	40.40	1.70	4.80	4.28 [Formaldehyde]
Review Engineer: Joshua L. Harris/Booker T. Pullen			Comments / Recommendations:				
Review Engineer's Signature: _____			<p>Issue: 10730T00 Permit Issue Date: XXXXX xx 2022 Permit Expiration Date: April 30, 2027</p>				

1. Purpose of Application

The Surry County Landfill is an active municipal solid waste (MSW) landfill located in Mount Airy, Surry County, North Carolina. The initial application (No. 8600170.19A) was submitted to the DAQ on August 26, 2019 when the landfill and the gas-to-energy facility were considered one source and the application was considered complete on that date. When the landfill and the gas-to-energy facility separated in 2022, the application for the landfill was re-entered into the DAQ IBEAM data base as 8600177.22A, but the application was considered complete when the application first came in on August 26, 2019.

Because the application was re-entered into IBEAM in 2022, the suffix of the application number is .22A. This application was initially submitted when the gas-to-energy facility was the only permitted source at this landfill site. The landfill itself was exempt from requiring a permit per regulation 15A NCAC 02Q .0102 (g)(13). When this regulation was revised in March 2022, the regulation was not correctly written in the rules. This language is being revised to correct this issue.

The regulation should indicate that municipal solid waste landfills are exempt from permitting and read as follows: “The following activities shall not require a permit or permit modification pursuant to 15A NCAC 02Q .0300: solid waste landfills, municipal solid waste landfills (This part does not apply to flares and other sources of combustion at solid waste landfills. These flares and other combustion sources shall obtain a permit pursuant to 15A NCAC 02Q .0300 unless they qualify for another exemption...”).

The purpose of Application No. 8600170.22A is to obtain a 1st-Time Title V air permit as a result of an expansion of the landfill. With this expansion, the landfill’s design capacity exceeds the mass and volume thresholds by which a Part 70 permit is required by NSPS Subpart XXX.

Since the initial application submittal by the Surry County Landfill, the gas-to-energy portion of the landfill was sold to COC Surry LFG, LLC and this facility received its own separate “small” permit (10275R03) on January 31, 2022 for the engine/generator unit. COC Surry LFG, LLC retained the facility ID number (8600170) and the previous permit number (10275R02) because it was the only source on the previous permit. A new application number (8600177.22A) and permit number (10730T00) was assigned to the landfill because it was not previously on the permit (exempted by regulation). This permit will be a 1st Title V for the Surry County Landfill.

Application No. 8600177.22A will go through the 30-day public notice, and a 45-day EPA review period prior to issuance.

The facility contact for this application is Jessica Montgomery, Public Works Director/County Engineer, (phone: 336-401-8376). The initial application was prepared by a consultant, Municipal Engineering Services Company, P.A. (MESCO). An amended application was submitted on behalf of the landfill by Carlson Environmental Engineers, PC (CEC). The contact at CEC is Lia Carstens, Environmental Scientist, (phone: 425-283-2679).

2. Facility Description

The Surry County Landfill is an active MSW landfill operating under Solid Waste Permit No. 8606. The landfill consists of one active Subtitle D landfill and two separate closed landfill sites. Surry County Landfill was issued a permit-to-construct by Solid Waste on October 18, 2018, for the Phase 4 lateral expansion which increased the permitted design capacity, triggering the modification provisions of NSPS Subpart XXX. This expansion also resulted in a design capacity greater than 2.5 million Mg, and 2.5 million cubic meters, triggering the requirement for the County to obtain a Title V air permit. Construction commenced on this expansion in March of 2019.

This landfill has a voluntarily installed gas collection and control system (GCCS). Collected gas is routed to a treatment system, then to a gas-to-energy facility (COC Surry LFG, LLC) where it is combusted in a 2,242 hp landfill gas-fired engine/generator unit for electricity generation. There are currently no back-up flares because the landfill is not currently required by regulation to operate a control system.

There are a number of insignificant sources on site including two emergency generators, two waste oil-fired furnaces, as well as various storage tanks and mobile sources.

3. Permit History

Revision No.	Issue Date	Description
R00	12/13/2012	Initial permit issued to Surry County Landfill.
R01	08/13/2016	Administrative amendment issued Surry County Landfill to update SB3 BACT limitations.
R02	03/28/2018	Renewal permit issued to the Surry County Landfill.
R03	01/31/2022	The Landfill sold the engine/generator unit to COC Surry LFG, LLC and this facility kept the facility ID of 8600170 and the permit number of 10275 since the landfill was not ever listed on the permit due to exemption per 15A NCAC 02Q .0102. Therefore, permit number 10275R03 is now in the name of COC Surry LFG, LLC.

4. Application Chronology

- 08/26/19 The Division of Air Quality (DAQ), Winston Salem Regional Office (WRO), received the initial Application No. 8600170.19A for a 1st time Title V permit. The application was forwarded to the Raleigh Central Office (RCO).
- 08/28/19 RCO received the application. The application contained the required forms, and there was no request for confidentiality.
- 08/30/19 RCO sent the facility a letter acknowledging receipt of permit application stating that the application was complete as of August 26, 2019.
- 09/18/19 Robert Barker, WSRO, provided Regional Office comments on the permit application.
- 08/28/19 Through 03/18/20 Multiple conversations and emails were exchanged between Joshua Harris and Maddie German, MESCO, regarding the permit application and questions regarding emission rate calculations, assertions of applicability of MACT AAAA, Tier 2 testing, etc. The facility eventually decided to conduct Tier 2 testing to demonstrate that the landfill's NMOC emission rate is below the 34 Mg/yr threshold for a required GCCS under NSPS XXX. An addendum to the application was submitted to address some of the questions asked, including updated information needed to conduct toxics modeling.

In the course of discussions over emission rate calculation methods, Mr. Harris discovered that the owner of the LFGTE site, ReNew Petra was not aware of the changing permit. ReNew Petra expressed concern over having the LFG-fired engine being placed on Surry County's TV air permit, but they (ReNew Petra) did not want to obtain their own permit for the engine.

Mr. Harris informed Ms. German that the engine will need to remain on the County's permit unless ReNew Petra obtains their own permit for the engine. The application was placed on hold until the County and ReNew Petra decided how to move forward.

- 03/19/20 Joshua Harris received an email from Maddie German stating that she will no longer be the contact for this application, and that if there are questions, the new contact at MESCO will be Steve Gandy, Senior Project Manager.
- 07/20/20 Joshua Harris received an email from Steve Gandy, who inquired as to the status of the application and permit. Mr. Harris replied that the application was on hold while Surry County and ReNew Petra decide how to move forward regarding permitting and their own contractual agreements.
- 11/17/20 Joshua Harris received an email from Jim Christiansen, Senior Project Director with Carlson Environmental Consultants, PC (CEC), regarding the permit application. In a subsequent phone call, Mr. Christiansen asked about various permitting scenarios, including proposals which would involve Surry County holding two permits, one TV permit for the landfill, and one small source permit for the LFG-fired engine. Mr. Harris responded that a scenario such as that would beg the question as to why one entity would have two permits for related sources on the same site, and that ultimately the only way for the engine to not appear on the County's TV permit is for ReNew Petra to obtain their own permit for the source.
- 12/09/20 Joshua Harris received an email from Jim Christiansen regarding permitting for the LFG-fired engine. Mr. Christiansen stated that the engine will not be retained on Surry County's permit for the landfill, and that ReNew Petra will pursue their own permit. Mr. Harris replied, stating that ReNew Petra will have to submit a separate application for the LFGTE site. Mr. Harris also listed some changes that will need to be made to the County's TV application for the landfill, including elimination of the engine where mentioned, and updates needed for calculations and forms submitted for toxics modeling.
- 04/22/21 Joshua Harris sent an email to Jim Christiansen inquiring as to the status of the application. Mr. Harris also mentioned that there were two emergency generators and used oil heaters discovered during the last inspection that need to be included in the application.
- 04/27/21 Jim Christiansen replied to Joshua Harris' email stating that discussions between Surry County and the LFGTE plant operator are still ongoing.
- 05/03/21 Joshua Harris replied to Jim Christiansen with concerns over allowing the discussion to drag on too long since the application has already been with DAQ for over 18 months.
- 06/30/21 Joshua Harris received an email from Jim Christiansen who stated that the LFGTE plant will be pursuing a separate permit from that of Surry County, and that an addendum to the County's TV application will be submitted.
- 07/23/21 Joshua Harris spoke with Lia Carstens who had questions regarding the application addendum.

- 09/28/21 Joshua Harris received an email from Lia Carstens with an application addendum to the initial application which accounts for the removal of the LFG-fired generator, including updated calculations, and updated emission rates for the modeling request. The hard copy was received in the RCO on October 5, 2021.
- 10/19/21 Joshua Harris sent Lia Carstens an email regarding insignificant source descriptions for the emergency engines and waste-oil-fired furnaces.
- 10/21/21 Joshua Harris received an email from Lia Carstens with the manufacture dates of the emergency generators. Ms. Carstens also stated that it would be accurate to call the sources listed as “oil heaters” in the application waste oil furnaces.
- 10/29/21 Joshua Harris sent Lia Carstens an email regarding the status of the application for the LFGTE facility. Mr. Harris stated that there is no reason for DAQ to hold the drafts for the Surry County Landfill while the LFGTE facility prepares its application. Mr. Harris emphasized that if the County’s TV permit is issued without the LFG-fired engine as a source, then the engine will have to cease operation until the LFGTE facility obtains a separate permit for operation.
- Jim Christiansen replied stating that CEC does not have any information regarding the progress of the application, and that the county will need to answer those questions.
- 12/17/21 Application no. 8600170.21A was received for a name change for permit number 10275R02 from the Surry County Landfill to the operator COC Surry LFG, LLC for owner ReNew Petra. Permit number 10275R03 was issued on January 31, 2022.
- 01/21-22/2022 Tier 2 testing for NMOC was initially performed on January 21-22, 2020. The facility requested (February 19, 2020) that a resampling of two location at the landfill due to the samples being compromised during transport. The areas were resampled on February 27, 2020 by Carlson Environmental Consultants, PC and the test was approved by the DAQ on August 24, 2020.
- Xx/xx/22 Booker T. Pullen sent electronic copies of the draft permit and review documents to Samir Parekh, and Ray Stewart for comments.
- Xx/xx/22 Booker T. Pullen sent electronic copies of the draft permit and review documents to Chris Knopf, Jessica Montgomery.
- Xx/xx/22 Comments received..
- Xx/xx/22 30-day public notice and 45-day EPA review periods begin.
- Xx/xx/22 Public notice period ends; [comments received].
- Xx/xx/22 EPA review period ends; [comments received].
- Xx/xx/22 Air Quality Permit Revision No. 10730T00 issued.

5. Table of Changes for new Permit 10730T00

As a 1st-Time Title V permit, all parts of the cover letter and permit are new.

Page No.	Section	Description of Changes
All Pages	All Sections	All parts of the cover letter and permit are new.

6. Changes in Equipment/Permitted Sources

- Added municipal solid waste landfill as a permitted source (ID No. ES-02).
- Added one landfill gas collection system as a “voluntary” control device ID No. CD-GCCS.
- Added one landfill gas treatment system as “voluntary” control device ID No. CD-Treatment.
- Added Leachate/storm water treatment process ID No. IES-01
- Added 21 hp gasoline-fired emergency generator as insignificant source ID No. IES-02.
- Added 50 hp diesel-fired emergency generator as insignificant source ID No. IES-03.
- Added 75-gallon gasoline storage tank as insignificant source ID No. IES-04.
- Added 0.25 mmBtu/hr waste oil-fired furnace as insignificant source ID No. IES-05.
- Added 0.35 mmBtu/hr waste oil-fired furnace as insignificant source ID No. IES-06.
- Added new and used oil storage tanks as insignificant source ID No. IES-07.
- Added two diesel fuel storage tanks (275-gallon and 75-gallon capacity each) as insignificant source ID No. IES-08.
- Added various 55-gallon drums as insignificant source ID No. IES-09.
- Added various maintenance shop activities including welders, pumps, and portable generators as insignificant source ID No. IES-10.

The facility’s permitted emission sources are as follows:

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-02 NSPS XXX 40 CFR 61 Subpart M	Municipal solid waste landfill, consisting of two closed landfill sites, and one active Subtitle D landfill	CD-GCCS	Landfill gas collection system*
		CD-Treatment	Landfill gas treatment system* (Voluntary gas collection and control system)*

The facility’s insignificant activities are as follows:

Emission Source ID No.	Emission Source Description
IES-01	Leachate/storm water treatment process
IES-02 GACT ZZZZ	Gasoline-fired emergency generator (21 hp)
IES-03 GACT ZZZZ, NSPS IIII	Diesel-fired emergency generator (50 hp)
IES-04 GACT CCCCCC	Gasoline storage tank (75-gallon capacity)
IES-05	Waste oil-fired furnace (0.25 million Btu per hour heat input)
IES-06	Waste oil-fired furnace (0.35 million Btu per hour heat input)

IES-07	New and used oil storage tanks
IES-08	Two diesel fuel storage tanks (275-gallon and 75-gallon capacity)
IES-09	Various 55-gallon drums
IES-10	Maintenance shop activities including welders, pumps, and portable generators

7. NSPS, NESHAP, PSD, 112(r), CAM & Attainment Status

- **NSPS –**

- ✓ The MSW landfill (ID No. ES-02) is subject to 40 CFR 60, Subpart XXX, “Municipal Solid Waste Landfills that Commenced Construction, Reconstruction or Modification after July 17, 2014.” The Solid Waste Section issued a permit-to-construct for the Phase 4 expansion on October 18, 2018, which increased the permitted design capacity and triggered the modification provisions of NSPS XXX. Construction on that expansion commenced in March 2019, triggering applicability of NSPS XXX.
- ✓ The MSW landfill (ID No. ES-02) is NOT subject to 40 CFR 60, Subpart WWW, “Municipal Solid Waste Landfills,” since Subpart WWW is superseded by Subpart XXX.
- ✓ The gasoline-fired emergency generator (ID No. IES-02) is NOT subject to 40 CFR 60, Subpart JJJJ “Stationary Spark Ignition Internal Combustion Engines.” This engine was manufactured in November 2006. This date falls between the applicability dates for construction and manufacture.

Based on the manufacture date, the engine necessarily will have been ordered, and therefore constructed, after June 12, 2006. However, because the engine was manufactured before July 1, 2008 and has a maximum power less than 500 hp, the engine is not subject to NSPS Subpart JJJJ [40 CFR 60.4230(a)(4)(iii)]. This engine falls into the applicability “gap” as an engine that has no requirements under GACT Subpart ZZZZ, as described later, but is also not subject to the requirements of NSPS Subpart JJJJ.

The diesel-fired emergency generator (ID No. IES-03) is subject to 40 CFR 60, Subpart IIII “Stationary Compression Ignition Internal Combustion Engines” because the construction date of March 2019 is after the applicability date of the NSPS regulation. The requirements for this engine are emissions certification (purchase certified engine), fuel sulfur requirements, following of manufacturer maintenance requirements, non-resettable hour meter, and having a 100-hour limit per calendar year for non-emergency use.

- ✓ The portable generators listed under ID No. IES-10 are NOT subject to 40 CFR 60, Subparts IIII or JJJJ “Stationary Compression Ignition/Spark Ignition Internal Combustion Engines,” because these sources are NOT stationary sources.

- **NESHAP –**

- ✓ The MSW landfill (ID No. ES-02) is NOT subject to 40 CFR 63, Subpart AAAA “Municipal Solid Waste Landfills.” Although the landfill has a design capacity equal to or greater than 2.5 million Mg and 2.5 million m³, the estimated uncontrolled NMOC emissions are less than 50 Mg/yr based on Tier 2 testing. Additionally, the landfill is not collocated with a major source of HAPs.

- ✓ The MSW landfill (ID No. ES-02) is subject to 40 CFR 61, Subpart M “National Emission Standard for Asbestos,” since it is an active waste disposal site for asbestos-containing waste.
- ✓ The gasoline and diesel-fired emergency generators (ID Nos. IES-02 and IES-03) are subject to 40 CFR 63, Subpart ZZZZ, “Reciprocating Internal Combustion Engines.”

These engines, both of which are located at an area source of HAP and were constructed after June 12, 2006, are considered new emergency engines under this regulation [40 CFR 63.6590(a)(2)(iii)]. Compliance with GACT Subpart ZZZZ is achieved by complying with the requirements of NSPS Subpart IIII for IES-03 and JJJJ for IES-02, as applicable [40 CFR 63.6590(c)(1)].

As previously discussed, IES-02 falls into the applicability “gap” for NSPS Subpart JJJJ, and therefore has no requirements under GACT Subpart ZZZZ or NSPS Subpart JJJJ.

- ✓ The portable generators listed under ID No. IES-10 are NOT subject to 40 CFR 63, Subpart ZZZZ, “Reciprocating Internal Combustion Engines,” since these sources are NOT stationary sources.
- ✓ The gasoline storage tank (ID No. IES-04) is subject to 40 CFR 63, Subpart CCCCCC “Gasoline Dispensing Facilities” since the facility is an area source of HAPs, and the facility meets the definition of a gasoline dispensing facility as any stationary facility which dispenses gasoline into the tank of a motor vehicle, motor vehicle engine, nonroad vehicle, or nonroad engine, including a nonroad vehicle or nonroad engine used solely for competition. Gasoline storage tanks are listed as affected sources under §63.11111(a), and there are no size distinctions.

Since IES-04 is an insignificant activity, there is no permit condition, however the facility is still required to comply with Subpart CCCCCC. The facility has the general duty to minimize emissions by operating and maintaining affected sources, and their associated air pollution control and monitoring equipment, in a manner consistent with safety and good air pollution practices for minimizing emissions. In addition, since the facility’s throughput is expected to be less than 10,000 gallons per month based on information provided in the application, the facility is subject to the requirements of §63.11116.

This section states that the facility must handle the gasoline in a manner which will not result in vapor release to the atmosphere for an extended period of time. Measures to be taken include, but are not limited to:

- Minimize gasoline spills;
- Clean up spills as expeditiously as practicable;
- Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use; and
- Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices.

There are no notification or reporting requirements for facilities with a throughput of less than 10,000 gallons per month, however, the facility shall supply records of gasoline throughput within 24 hours of a request by DAQ.

Additionally, should the facility’s monthly gasoline throughput exceed 10,000 gallons, the facility will be subject to the requirements of §63.11117 for facilities with a monthly throughput of 10,000 gallons of gasoline or more, or §63.11118 for facilities with a monthly throughput of 100,000 gallons of gasoline or more, whichever is applicable, and must meet the applicable notification, testing, monitoring, recordkeeping, and reporting requirements. If an affected source’s throughput ever exceeds an applicable throughput threshold, the affected source will remain subject to the requirements for sources above the threshold, even if the affected source throughput later falls below the applicable source threshold. [§63.11111(i)]

- **PSD** – The facility’s potential emissions of criteria pollutants do not exceed PSD permitting thresholds.
- ✓ Surry County has triggered increment tracking under PSD for PM₁₀, SO₂, and NO_x. This permitting action results in the following changes:

Pollutant	Change due to inclusion of emergency generators (IES-02 and 03) (lb/hr)	Change due to inclusion of waste oil-fired heaters (IES-05 and 06) (lb/hr)	Net Change (lb/hr)
PM ₁₀	+ 0.039	+ 0.011	+ 0.05
SO ₂	+ 0.115	+ 0.400	+ 0.52
NO _x	+ 0.848	+ 0.044	+ 0.89

* Changes based on emission rates reported on previous permit revisions. The only change was reported for NO_x in revision No. R00.

- **112(r)** – The facility does not store any of the listed 112(r) chemicals in amounts that exceed the threshold quantities. Therefore, the facility is not required to maintain a written Risk Management Plan (RMP).
- **CAM** – The facility’s potential emissions are below Major Source thresholds, and there are no control devices at this facility, therefore, CAM does not apply.
- **Attainment status** – Surry County is in attainment for all criteria pollutants.

8. Regulatory Review

The facility is subject to the following air quality regulations in addition to the General Conditions:

- 15A NCAC 02D .0524: New Source Performance Standards, 40 CFR 60, Subpart XXX
- 15A NCAC 02D .1110: National Emission Standards for Hazardous Air Pollutants, 40 CFR 61, Subpart M
- 15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions

15A NCAC 02D .0524: New Source Performance Standards, 40 CFR 60, Subpart XXX

The facility is subject to 40 CFR 60, Subpart XXX since it was modified after July 17, 2014. The newest phase of construction commenced in March 2019. No reports or notifications had been received by DAQ, however DAQ's policy has been to consider filings made with the Department of Waste Management to be sufficient for design capacity reports. Since the permit contained a Tier 1 NMOC emission rate estimate, the application is being considered as the first NMOC report received by the Division, therefore the date of the report is assumed to be August 26, 2019, which is the date the application appears to have been prepared. The application indicated that NMOC emissions from the landfill surface exceeded the 34 Mg/yr threshold at the time of submittal, based on the Tier 1 inputs.

The landfill subsequently conducted Tier 2 testing on January 21-22, 2020. On February 19, 2020, the facility submitted a letter with a request to resample a portion of the landfill due to apparent air infiltration discovered in three of the nine composite canisters. The WSRO granted the request, and the area was resampled on February 27, 2020. The Stationary Sources Compliance Branch (SSCB) has reviewed the results and determined the results to be acceptable. The Tier 2 test resulted in a projected NMOC emission rate of 6.9 Mg/yr through 2024 (test approval letter August 24, 2020). Therefore, a GCCS is not required to be installed at this time.

The Surry County Landfill will continue to conduct Tier 2 testing. If at some point in the future the facility cannot demonstrate through Tier 2 testing that the NMOC emission rate is below the 34 Mg threshold, then the County will be required to submit a GCCS design plan, install an approved GCCS and submit a permit modification to include the appropriate requirements for operation and monitoring, or attempt to demonstrate that the NMOC emission rate is below the threshold via other test Tiers. Compliance is expected.

15A NCAC 02D .1110: National Emission Standards for Hazardous Air Pollutants, 40 CFR 61, Subpart M

Surry County landfill is an active disposal site for asbestos-containing wastes; therefore, it is subject to the requirements of this regulation. To comply, the facility must adhere to a general set of work practices which may include ensuring there are no visible emissions at the disposal site, covering waste daily with at least six inches of compacted non-asbestos material or use another dust suppression agent; the landfill may propose alternative methods for DAQ approval. The facility will be required to post signage and barriers if the method of compliance does not include covering the asbestos-containing waste. Closed portions of the landfill which have previously received asbestos-containing waste are also subject and are required to comply with the requirements of 40 CFR 61.151 for inactive waste disposal sites. Compliance is expected.

15A NCAC 02D .1806: Control and Prohibition of Odorous Emissions

This is applicable facility wide. DAQ inspectors have not noted odors beyond the facility's property boundary, and neither DAQ nor the facility have received any odor complaints from nearby residents. Continued compliance is expected.

9. Other Regulatory Requirements

- A Zoning Consistency Determination was submitted with the permit application. Kim Bates, Planning Director of the Surry County Planning and Development Department, determined (August 19, 2019) that the proposed operation IS consistent with applicable zoning ordinances.

- The addendum to the initial application was sealed by Kristofer L. Carlson, who is a registered Professional Engineer in the State of North Carolina (Seal #028334).
- The required permit application fee of \$970 was received by Raleigh Regional Office prior to the application being forwarded to the Raleigh Central Office.

10. Air Toxics

This modification results in an increase in toxic emissions from the facility, however since the landfill is subject to 40 CFR 61, Subpart M, it is exempt from permitting for toxics per 02Q .0702(a)(27)(A). The potential volume emissions from the landfill surface were calculated using the methodology in AP-42 Chapter 2.4 (November 1998) and are based on a total LFG generation rate of 665 cfm, or 9,900,266 m³/year in CY2054 as determined using LandGEM. The facility used the AP-42 concentrations for all pollutants. The most conservative estimation of toxics emissions for this facility will be that the landfill gas and collection by the GCCS is not accounted for since the GCCS is not required to operate. Therefore, therefore, all emission rates are assumed to be the maximum uncontrolled emission rates from the landfill surface (volume source).

The following parameters were used by the facility in the October 5, 2021 addendum to the initial application using LandGEM to determine the peak facility-wide methane generation rate:

Parameter	Northern Closed Site	Southern Closed Site	Lined Landfill Phases 1-4
Landfill Open Year	1969	1969	1999
Landfill Closure Year	1991	1998	2054
Design Capacity (short tons) (Waste-in-place if closed)	565,708	914,152	3,143,974
Waste Acceptance Rate (TPY)	Historical, Closed	Historical, Closed	Historical, plus 56,569 TPY
Methane Generation Rate* (k, year ⁻¹)	0.04	0.04	0.04
Potential Methane Generation Capacity (L ₀ , m ³ /Mg)	100	100	100
NMOC Concentration as hexane* (ppmv)	119	119	119
LFG Generation Rate at Site-Wide Peak in CY2054 (cfm)	15	32	618
Contribution to the Total Emission Rate	2.3%	4.8%	92.9%

* 2020 Tier 2 sample (test approval letter August 24, 2020)

**From the amendment to the initial application, Landgem maximum in the year 2054

The total maximum emissions of landfill gas from the in-place waste will occur in year 2054 and will be equal to 665 ft³/minute (or

The following example calculation is for benzene emissions from the landfill surface. The best methods to estimate emission are mass balance methods using pollutant concentrations.

$$\frac{665.0 \text{ ft}^3}{\text{min}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{8760 \text{ hours}}{\text{year}} \times \frac{1 \text{ meter}^3}{35.315 \text{ ft}^3} = \frac{9,897,324 \text{ cubic meters}}{\text{year}}$$

- Projected LFG generation rate = 9,897,324 m³/year
- Methane is 50% of the LFG stream = 4,948,662 m³/year
- Q_B = Emission rate of benzene, m³/hour
- C_B = Concentration of benzene (1.91 ppmv, AP-42 default)
- Multiplication factor for 50% methane concentration in landfill gas = 100/50 (2.0)
- Molecular weight of benzene = 78.11 g/gmol

$$Q_B = 2.0 \times Q_{CH_4} \times \left(\frac{C_B}{1 \times 10^6} \right) \text{ (AP-42, Equation 3)}$$

$$Q_B = 2.0 \times 4,948,662 \frac{m^3}{year} \times \left(\frac{1.91 \text{ parts}}{1 \times 10^6} \right) = 18.90 \frac{m^3}{year}$$

Sample calculation for the uncontrolled mass emission rate of benzene (UM_B) was found using Equation 4 of AP-42, Section 2.4.4.2.

$$UM_B = 18.90 \frac{m^3}{hour} \times \left[\frac{78.11 \text{ g/gmol} \times 1 \text{ atm}}{8.205 \times 10^{-5} \frac{m^3 - atm}{gmol - K} \times 1000 \frac{g}{kg} \times (273 + 25^\circ C) K} \right] \times 2.205 \frac{pounds}{kg}$$

$$UM_B = 133.13 \frac{pounds}{year}$$

The projected toxic air pollutant emission rates through CY2054 were calculated in a similar fashion and compared to their respective TPERs from 02Q .0711(a) as follows:

Toxic Air Pollutant	Averaging Period	Landfill Volume Emissions	TPER	Modeling Required?
1,1,1-Trichloroethane (methyl chloroform)	lb/day	0.16	250	No
	lb/hr	6.53 x 10 ⁻³	64	No
1,1,2,2-Tetrachloroethane	lb/yr	166.34	430	No
1,1-Dichloroethene (vinylidene chloride)	lb/day	4.74 x 10 ⁻²	2.5	No
1,2-Dibromoethane (ethylene dibromide)	lb/yr	0.17	27	No
1,2-Dichloroethane (ethylene dichloride)	lb/yr	36.22	260	No
2-Butanone (MEK)	lb/day	1.25	78	No
	lb/hr	5.21 x 10 ⁻²	22.4	No
4-Methyl-2-pentanone (MIBK)	lb/day	0.46	52	No
	lb/hr	1.91 x 10 ⁻²	7.6	No
Acrylonitrile	lb/day	0.82	0.4	YES
	lb/hr	3.42 x 10 ⁻²	0.22	No
Benzene	lb/yr	133.13	8.1	YES
Carbon disulfide	lb/day	0.11	3.9	No
Carbon tetrachloride	lb/yr	0.55	460	No
Chlorobenzene	lb/day	6.88 x 10 ⁻²	46	No
Chloroform	lb/yr	3.20	290	No
p-Dichlorobenzene	lb/hr	3.15 x 10 ⁻³	16.8	No
Dichloromethane (methylene chloride)	lb/yr	1084.45	1600	No
	lb/hr	0.12	0.39	No

Ethyl mercaptan	lb/hr	1.44 x 10 ⁻²	0.025	No
n-Hexane	lb/day	1.38	23	No
Hydrogen Sulfide	lb/day	2.96	1.7	YES
Mercury vapor	lb/day	1.43 x 10 ⁻⁴	0.013	No
Methanethiol (methyl mercaptan)	lb/hr	1.22 x 10 ⁻²	0.013	No
Tetrachloroethylene (Perchloroethylene)	lb/yr	552.25	13000	No
Toluene	lb/day	8.86	98	No
	lb/hr	0.37	14.4	No
Trichloroethylene	lb/yr	330.83	4000	No
Vinyl chloride	lb/yr	409.58	26	YES
Xylene	lb/day	3.14	57	No
	lb/hr	0.13	16.4	No

The emission rates for acrylonitrile, benzene, hydrogen sulfide, and vinyl chloride are projected to exceed their respective TPERs. The facility requested that DAQ perform the dispersion modeling analysis based on the addendum to the permit application. Four air toxics, acrylonitrile, benzene, hydrogen sulfide, and vinyl chloride were evaluated using AERMOD (v21112) using the 2014-2018 surface data for Winston-Salem and upper air data for Greensboro. Three area polygon sources were modeled with receptors placed at 50-meter intervals along the fence line and at 100-meter intervals out to 2000 meters. The modeling analysis was completed by Nancy Jones of the DAQ AQAB on November 5, 2021 and determined that the modeling adequately demonstrates compliance, on a source basis, for all toxics modeled.

The modeling demonstration resulted in the following impacts at the facility's property boundary:

Toxic Air Pollutant	Averaging Period	Modeled Emission Rates	Maximum Concentration (µg/m ³)	AAL (µg/m ³)	% AAL
Acrylonitrile	1-hour	0.0342	0.62	1000	< 1%
	24-hour	0.82	0.048	30	< 1%
Benzene	Annual	133.13	0.0020	0.012	17%
Hydrogen sulfide	24-hour	2.96		120	< 1%
Vinyl chloride	Annual	409.6	0.0065	0.038	17%

Emissions of toxic air pollutants should be periodically re-evaluated as the landfill grows, since emission rates can change depending on the actual waste placement rate. Since none of the toxic air pollutants evaluated exceed their respective TPERs or AALs, DAQ has determined that there is not an unacceptable risk to human health.

11. Emissions Review

MSW Landfill Emissions:

The potential volume emissions from the landfill surfaces (ID No. ES-02) were calculated using the methodology in AP-42 Chapter 2.4 (November 1998) and are based on the LFG generation rate determined using LandGEM. First the NMOC emission rate is calculated using the same method as the example for benzene shown in Section 10. Using that method, the NMOC emission rate was determined to be 4.57 tons per year.

To calculate the VOC component of the landfill's uncontrolled surface emissions, AP-42 states in note "c" of Table 2.4-2 that VOC emissions are 39 wt.% of the NMOC emissions, therefore:

$$UM_{VOC} = 0.39 \times 4.57 \frac{\text{tons}}{\text{year}} = 1.78 \frac{\text{tons VOC}}{\text{year}}$$

Emergency Generator Emissions:

The potential emissions from the facility's stationary emergency generators were calculated using emission factors from AP-42, Table 3.3-1, except for PM, NO_x, and CO from the diesel-fired emergency generator, for which NSPS IIII emission limits were used as a basis for calculation. Operation hours for emergency engines were assumed to be a maximum of 500 hours per year in keeping with EPA guidance.

For the 21 hp gasoline-fired emergency generator (ID No. IES-02):

PM: 7.21×10^{-4} lb/hp-hr (all particulate matter emitted is assumed to be as PM_{2.5})

SO₂: 5.91×10^{-4} lb/hp-hr

NO_x: 0.011 lb/hp-hr

CO: 6.96×10^{-3} lb/hp-hr

VOC: 1.99×10^{-2} lb/hp-hr (sum of crankcase and exhaust TOC)

Examples:

PM:

$$21 \text{ hp} \times \frac{7.21 \times 10^{-4} \text{ lb PM}}{\text{hp-hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.004 \frac{\text{tons PM}}{\text{year}}$$

SO₂:

$$21 \text{ hp} \times \frac{5.91 \times 10^{-4} \text{ lb SO}_2}{\text{hp-hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.003 \frac{\text{tons SO}_2}{\text{year}}$$

NO_x:

$$21 \text{ hp} \times \frac{0.011 \text{ lb NO}_x}{\text{hp-hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.06 \frac{\text{tons NO}_x}{\text{year}}$$

CO:

$$21 \text{ hp} \times \frac{6.96 \times 10^{-3} \text{ lb CO}}{\text{hp-hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.04 \frac{\text{tons CO}}{\text{year}}$$

VOC:

$$21 \text{ hp} \times \frac{1.99 \times 10^{-2} \text{ lb VOC}}{\text{hp} - \text{hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.10 \frac{\text{tons VOC}}{\text{year}}$$

For the 50 hp diesel-fired emergency generator (ID No. IES-03):

PM: 0.22 g/hp-hr (all particulate matter emitted is assumed to be as PM_{2.5})

SO₂: 2.05 x 10⁻³ lb/hp-hr

NO_x: 5.60 g/hp-hr

CO: 4.10 g/hp-hr

VOC: 2.51 x 10⁻³ lb/hp-hr (sum of crankcase and exhaust TOC)

Examples:

PM:

$$50 \text{ hp} \times \frac{0.22 \text{ g PM}}{\text{hp} - \text{hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{1 \text{ kg}}{1,000 \text{ g}} \times \frac{2.205 \text{ lb}}{\text{kg}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.006 \frac{\text{tons PM}}{\text{year}}$$

SO₂:

$$50 \text{ hp} \times \frac{2.05 \times 10^{-3} \text{ lb SO}_2}{\text{hp} - \text{hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.03 \frac{\text{tons SO}_2}{\text{year}}$$

NO_x:

$$50 \text{ hp} \times \frac{5.60 \text{ g NO}_x}{\text{hp} - \text{hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{1 \text{ kg}}{1,000 \text{ g}} \times \frac{2.205 \text{ lb}}{\text{kg}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.15 \frac{\text{tons NO}_x}{\text{year}}$$

CO:

$$50 \text{ hp} \times \frac{4.10 \text{ g CO}}{\text{hp} - \text{hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{1 \text{ kg}}{1,000 \text{ g}} \times \frac{2.205 \text{ lb}}{\text{kg}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.11 \frac{\text{tons CO}}{\text{year}}$$

VOC:

$$50 \text{ hp} \times \frac{2.51 \times 10^{-3} \text{ lb VOC}}{\text{hp} - \text{hr}} \times \frac{500 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.03 \frac{\text{tons VOC}}{\text{year}}$$

Waste Oil-Fired Furnace Emissions:

The potential emissions from the facility's waste oil-fired furnaces were calculated using emission factors from AP-42, Table 1.11-2, and the total maximum oil consumption of 4 gallons per hour (gph) (1.7 gph for IES-05 and 2.3 gph for IES-06):

PM: 2.8 lb/1,000 gal (all particulate matter emitted is assumed to be as PM_{2.5})

SO₂: 100.0 lb/1,000 gal

NO_x: 11.0 lb/1,000 gal

CO: 1.7 lb/1,000 gal

VOC: 1.0 lb/1,000 gal (as TOC)

Examples:

PM:

$$\frac{4 \text{ gal}}{\text{hour}} \times \frac{2.8 \text{ lb PM}}{1,000 \text{ gal}} \times \frac{8,760 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.05 \frac{\text{tons PM}}{\text{year}}$$

SO₂:

$$\frac{4 \text{ gal}}{\text{hour}} \times \frac{100.0 \text{ lb SO}_2}{1,000 \text{ gal}} \times \frac{8,760 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 1.75 \frac{\text{tons SO}_2}{\text{year}}$$

NO_x:

$$\frac{4 \text{ gal}}{\text{hour}} \times \frac{11.0 \text{ lb NO}_x}{1,000 \text{ gal}} \times \frac{8,760 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.19 \frac{\text{tons NO}_x}{\text{year}}$$

CO:

$$\frac{4 \text{ gal}}{\text{hour}} \times \frac{1.7 \text{ lb CO}}{1,000 \text{ gal}} \times \frac{8,760 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.03 \frac{\text{tons CO}}{\text{year}}$$

VOC:

$$4 \frac{\text{gal}}{\text{hour}} \times \frac{1.0 \text{ lb VOC}}{1,000 \text{ gal}} \times \frac{8,760 \text{ hours}}{\text{year}} \times \frac{\text{ton}}{2,000 \text{ lb}} = 0.02 \frac{\text{tons VOC}}{\text{year}}$$

12. Statement of Compliance

This is the first permit for this site with the landfill as a source. The previous permit (10275R02) only contained the landfill gas-fired engine/generator set (ES-01) and did not include the landfill because the landfill was exempted for being permitted in accordance with 15A NCAC 02Q .0102 due to its design capacity (size and volume) being below the NSPS Subpart XXX thresholds (2.5 million Mg and 2.5 cubic meters).

13. Public Notice Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA.

The 30-day public notice period was from **March XX, 2022 through April XX, 2022.**

The EPA 45-day review period was from **March XX, 2022 through May XX, 2022.**

[Number of] comments were received during the public notice period and the EPA review period.

14. Comments and Recommendations

The 1st-Time Title V permit application for the Surry County Landfill located in Mount Airy, Surry County, North Carolina has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 10730T00.