NORTH CAROLINA DIVISION OF AIR QUALITY Air Permit Review – Renewal Permit Issue Date: January XX, 2012	Region: Washington Regional Office County: Bertie NC Facility ID: 0800102 Inspector's Name: Mike Smithwick Date of Last Inspection: 11/08/2010 Compliance Code: 3 / Compliance - inspection
Facility Data Applicant (Facility's Name): Eastern Carolina Regional Solid Waste Landfill Facility Address: East Carolina Regional Solid Waste Landfill 1922 Republican Road Aulander, NC 27805 SIC: 4953 / Refuse Systems NAICS: 562212 / Solid Waste Landfill Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V	Permit Applicability (this application only) SIP: 15A NCAC 2Q. .0513 NSPS: Subpart WWW (revised gas collection and control system design plan with alternate monitoring, recordkeeping, reporting, and operational requirements) NESHAP: N/A PSD: N/A PSD Avoidance: N/A NC Toxics: N/A 112(r): N/A Other: N/A
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Application Data
Application Number: 0800102.10A
Date Received: 03/31/2010
Application Type: Renewal
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 08849T03
Existing Permit Issue Date: 02/10/2006
Existing Permit Expiration Date: 12/31/2010

Consultant: SCS Engineers, P.C. Contact: J. Morgan Phone: 704-504-3174 email: jmorgan@scsengineers.com

Review Engineer: Booker Pullen Regional Engineer: Arni Hopkins Review Engineer's Signature: Date: May 3, 2011	Comments / Recommendations: Issue: 08849T04 Permit Issue Date: January XX, 2012 Permit Expiration Date: December 31, 2017

I. Introduction/Description:

The Eastern Carolina Regional Landfill is owned and operated by Republic Services of North Carolina, LLC. This landfill is located in Aulander, North Carolina and began operation in October 1993.

The consulting firm SCS Engineers, P.C. submitted the information for this application on behalf of the Eastern Carolina Landfill. Application No. 0800102.10A was received by the Division of Air Quality Raleigh Central Office on March 31, 2010 and was considered complete on that date. A revised application was received on April 8, 2010. This application will be processed as a renewal and will be sent through both the 30-day public and the 45-day EPA review at this time.

II. Purpose of application:

The purpose of application No. 0800102.10A, is:

- For the renewal of a Title V permit in accordance with 15A NCAC 2Q .0513;
- To update and revise the gas collection and control system design plan (previously submitted in May 2001); and
- Include alternative monitoring, recordkeeping, operation, and reporting requirements in the Air Permit.

III. Statement of Compliance:

On the latest inspection of this facility performed on November 8, 2010 by Mr. Mike Smithwick of the Washington Regional Office, the facility appeared to be in compliance with all applicable regulations.

IV. Table of changes to existing permit No. 088849T03, per renewal application 0800102.10A

Cover Letter of Permit			
Old Page No.	New Page No.	Condition No.	Changes
Page 1	Page 1	Cover letter	Changed date, revised permit number, added "renewal" to first paragraph, added most current cover letter
Page 2	Page 2	Cover letter	Changed: date on letter, effective date of permit,
Page 3	Page 3	Cover letter	Revised "table of changes to the permit" per this application, changed application number.
Body of Permit			
Page 1	Page 1	Cover page	Changed: Permit No., "Replaces Permit No.", effective date of permit, application No., permit issue date, changes name of permitting chief to Don van der Vaart
All pages	All pages	Top of pages	Changed permit revision number
Page 2	Page 2	Table of Contents	Removed "Part II" Section of the permit
Page 3	Page 3	Permitted Emissions Sources	Removed the "Part I" heading and the two subsequent paragraphs under the heading,
N/A	Pages	Specific Limitations and Conditions	Updated the permit with the most current regulatory language for landfills
Pages 10 - 18	Pages 16-25	General Conditions	Added the most current version of the General Conditions (revision 3.5)

V. Summary of Emission Sources and Control Devices

This table identifies all emission sources and associated control devices for which this Title V Operating Permit is being issued

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-01 NSPS Subpart WWW MACT Subpart AAAA	Municipal solid waste landfill	CD-GCCS1 and CD-Flare1	One landfill gas collection and control system with: One landfill gas-fired candlestick type flare (3000 scfm, 3000 scfm, 90 million Btu per hour heat input using a heat value of 500 Btu per cubic foot of landfill gas)

VI. Emission Source-by-Source Evaluation

A. Municipal solid waste landfill (ID No. ES-01) with associated gas collection & control system (CD-GCCS1) including one candlestick type flare (3000 scfm, 90 million Btu per hour heat input using a heat value of 500 Btu per cubic foot of landfill gas)

1. 15A NCAC 2D .0524: New Source Performance Standards (Subpart WWW)
2. 15A NCAC 2D .0516: Sulfur Dioxide Emissions
3. 15A NCAC 2D .0521: Control of Visible Emissions
4. 15A NCAC 2D .1100: Control of Toxic Air Pollutants
5. 15A NCAC 2D .1111: Maximum Achievable Control Technology
6. 15A NCAC 2D .1806: Control and Prohibition of Odorous Emissions
7. 15A NCAC 2Q .0705: Existing Facility and SIC Calls
8. 15A NCAC 2Q .0711: Toxic Emission Rates Requiring a Permit

No regulatory review is required for the regulations listed above because there are no changes to these sources since the permit last went through public notice. Compliance Assurance Monitoring (CAM) does not apply because these sources are regulated by both an NSPS and MACT that were promulgated after 1990 and control the pollutants that would be subject to CAM.

B. Since the last permit modification and/or renewal for this facility, the regulatory language included in Title V permits was revised to include more of the NSPS requirements into the body of the permit. This new revised language will be placed into this permit along with the revised General Conditions.

VII. Design Plan Review:

A. *Certification of Design plan {40 CFR §60.752(b)(2)(i)}:*
In accordance with NSPS Subpart WWW, §60.752(b)(2)(i) the gas collection and control system for this subtitle D (lined) landfill shall be sealed by a professional engineer. Mr. Steve C. Lamb, P.E. sealed the revised design plan and stated the following on August 3, 2010:

"I certify that the GCCS as described in this Plan meets the design requirements specified in 40 CFR 60.759 and any alternatives pursuant to 40 CFR 60.752(b)(2). I further certify that this plan was prepared by me or under my direct supervision and that I am a duly registered Professional Engineer under the laws of the State of North Carolina."

Compliance is indicated.

B. *Submittal of Design Plan {40 CFR §60.757(b)(1)(i) and §60.757(c)}:*
In accordance with 40 CFR §60.757(b)(i) and (c), the facility shall submit a GCCS design plan within one year of the first annual report that shows NMOC emissions exceeding 50 Mg per year. This application adds to the previously approved design plan.

This is an existing gas collection and control system that is being revised.

C. *Gas Collection and Control System Design and Construction {40 CFR §60.752(b)(2)(ii)}:*
When the design capacity of a municipal solid waste landfill facility becomes greater than 2.5 million megagrams and 2.5 million cubic meters and the calculated NMOC emission rate is greater than 50 Mg per year, the owner/ operator of the facility is subject the gas collection and control requirements of NSPS, Subpart WWW. Per 40 CFR §60.752(b)(2)(ii), this facility is required to install a gas collection and control system that captures the landfill gas that is generated by the landfill within 30 months of the first annual report in which the emission rate of NMOC equals or exceeds 50 megagrams. This facility initially submitted a gas collection and control system in May 200 and the design plan was approved.

The NSPS-compliant gas collection and control system has been in operation since the fall of 2001. The landfill currently has an active gas collection and control system consisting of the following primary components:
- 44 vertical extraction wells;
- A 3000 scfm open candlestick type flare equipped with two 1,500 scfm Houston Service Industries blowers
- Landfill gas condensate traps and sumps

The final gas collection and control system will consist of an additional 68 extraction wells. Normal operation for this facility is to route the collected landfill gas to the open type flare (CD-Flare1).

Maximum Gas generation rate {40 CFR §60.759(c) and §60.755}:
The projected maximum methane production rate (4,900 scfm) occurs in the year 2029 using the EPA LandGEM program. The peak design flow rate for sizing piping, the landfill gas blowers, and control devices is calculated to be 5390 scfm by adding 10% to the predicted LandGEM value. This existing system does not currently include a "landfill gas treatment system" as defined in NSPS Subpart WWW and MACT Subpart AAAA.

Well Placement (Radius of Influence) and Well Spacing {40 CFR §60.759}:
The final build out of the gas collection and control systems are projected to be 112 vertical extraction wells. The lower section of the wells will be comprised of high density slotted pipe that is offset above the liner to protect the liner from penetration. The upper section of the wells will be comprised of solid schedule high density pipe until it reaches below the Bentonite pellet/plug prior to slotted pipe. The extraction piping will be installed in 36-inch diameter boreholes. The Landfill may opt to use horizontal collectors as interim or final gas collection components. Horizontal collectors will be constructed with perforated HDPE pipe (4 to 8 inches) installed in a trench backfilled with gravel.

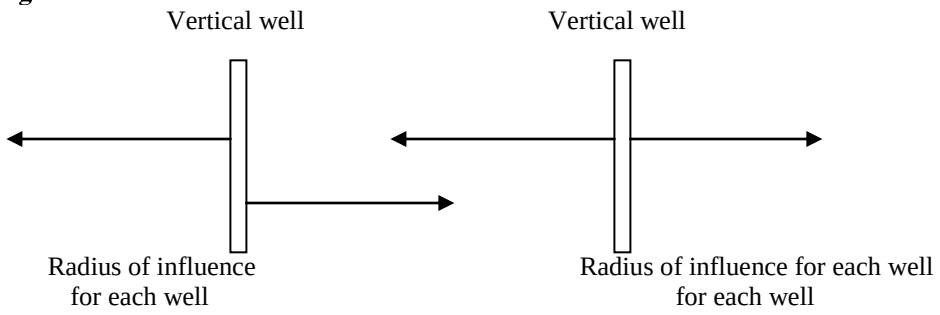
The correct placement of vertical wells is critical to the proper operation of a gas collection and control system. Wells that are placed too far apart may cause the system operator to apply too much vacuum to the system causing air intrusion which is toxic to anaerobic methanogen bacteria which slows down the rate of methane gas production.

When a well is placed under a vacuum or negative pressure, the recoverable landfill gas in the immediate vicinity will begin to move towards it. This area of gas movement is called a well's Radius of Influence". For ease of calculation, the area is assumed to be cylindrical with the vertical well in the center of the cylinder. The edge of the Radius of Influence is reached when the pull of the vacuum exerted by the well is zero (landfill gas will no longer move towards the well from beyond a certain point). The actual extent of influence will vary from well to well and cannot be measured until the well is actually installed. However, for design purposes, a theoretical radius of influence can be calculated based on certain assumptions made about the well and its surrounding refuse environment. The factors that influence a well's radius of influence include the depth of the well, the length of slotted pipe provided for gas collection, the rate of gas generation in the refuse, the refuse temperature, the amount of vacuum applied to the well, etc.

The movement of landfill gas through refuse is essentially the movement of a fluid through a porous media, which can be estimated using a modified form of Darcy's equation for radial fluid flow. By inserting typical landfill values into the modified Darcy equation, a default maximum radius of Influence of 248 feet can be calculated for wells 100 feet deep. If the design calculations estimate a well depth greater than 100 feet, a default maximum Radius of Influence of 248 feet will be used and the wells will be limited to 100 feet dept.

With a Radius of Influence of 248 feet, gas wells will theoretically collect gas from an area of about 4 acres in size. When the gas system designer plots the well locations on a landfill's topographic map and draws the calculated Radius of Influence around each well, it is desirable to achieve a certain degree of overlap of the circular Radius' of Influence. This will reduce the design collection area of each well. Final well densities usually are about 2 acres per well for most landfills. Since the calculations are theoretical to begin with, the overlap provides a factor of safety to the gas control system design.

Diagram 1



Well Design {40 CFR §60.759 and §60.756(a)}:

1. Boreholes:
   All existing extraction wells are constructed using either 6-inch HDPE or PVC pipe centered inside a 36 inch diameter boring. All well borings will be backfilled with gravel.

2. Casing:
   8-inch Schedule 80 PVC pipe is proposed to encase the extraction wells. The piping for the extraction wells will have a specified length of solid pipe below the upper liner before the pipe is perforated or slotted to allow the gas to flow into the pipe for collection.

3. Backfilling:
   The well borings are backfilled with gravel. A layer of hydrated bentonite and soil will be installed above the gravel pack to minimize air intrusion.

4. Well Bore Seals:
   Well bore seals will be made of 2 foot Bentonite Pellet plugs, clean soil plugs, crushed gravel, and 16 ounce Geotextile nonwoven donuts.

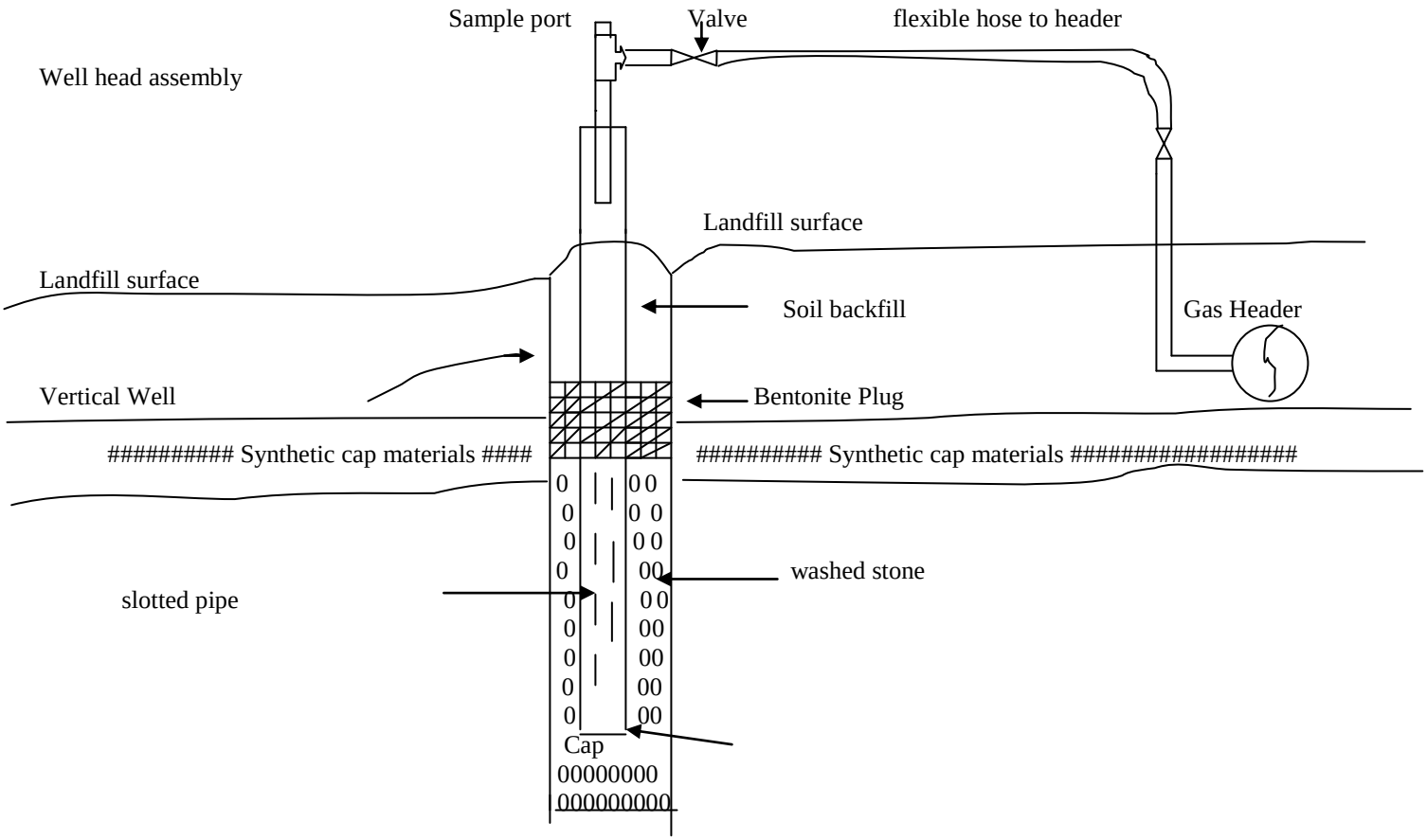
5. Wellheads:
   Each well will be equipped with a wellhead assembly that will include: a valve for adjusting pressure and flow, a flow measuring device (pitot tube or orifice plate), and sampling ports for monitoring available vacuum, applied vacuum and temperature. By controlling the applied vacuum at each well through wellhead valves, the monitoring personnel will be able to optimize the quality of the landfill gas and minimize air intrusion into the system. The wellhead assembly will be connected to the collection piping via a flexible hose. The flex hose will be long enough to allow some settlement of the landfill to occur without breaking the connection between the well and the collection piping. Diagram 2 of this review shows a typical vertical well assembly.

   Another option that may be used on a temporary basis for intermediate conditions is remote wellheads. It can be problematic to have a situation where gas is required to be collected from an area that meets the five-year/two –year criteria, but does not have waste at final grades yet. Wells can be extended as waste continues to be placed around a vertical well, but extending wells have limits. In some situations, a remote wellhead can be used. For such situations, a well may be placed in an active area to collect the required gas and a remote wellhead may be used. Instead of the wellhead being located directly on top of the well, a pipe may be run up to an area that is at final grade or will not have waste filling for a while. Waste can then be placed on top of the well without having to extend the well vertically and still have the monitoring done at a remote location away from the active filling area.

6. Corrosion Resistance:
   Corrosion resistance is achieved through the use of corrosion resistant materials or those that have a resistant coating such as PVC or HDPE piping.

   Compliance is indicated.

Diagram 2 *Typical Vertical Extraction Well*



7. Header and Lateral Pipe Sizing {40 CFR §60.759}:
To size the header and lateral pipes, SCS Engineers used the KYGAS computer model. KYGAS was developed by Dr. Don J. Wood and Dr. James E. Funk at the University of Kentucky. The program was modeled after KYPIPE, which models water distribution system. KYGAS is used to determine head losses, system pressures, and velocities in piping systems controlled under vacuum. KYGAS operates under the assumptions that all flow in the piping system is steady, one dimensional, isothermal flow for an ideal gas. The program uses the Darcy-Weisbach equation for head losses related to uncompressible flow and the Ideal Gas Law for pressure-temperature-density relationships.

KYGAS has several useful options to develop a landfill gas system. The program allows the user to model any type of piping system material or configuration to coincide with field conditions. The program includes tabular and graphic interfaces for the input of information regarding the system. Multiple blower locations may be used in the program to simulate actual field conditions. In addition, blower performance curves may be entered into the program for comparison to operational and actual field conditions. KYGAS is capable of running multiple scenarios for any piping configuration including looped header systems. Landfill gas flow units and pressure values at ht wells are user specified for comparison to values obtained in the field.

The following parameters are required for operation of KYGAS.

- Pipe inside diameter
- Pipe length
- Minor loss coefficient
- Roughness within the pipe
- Landfill gas flow rate into the system at each well or node
- Landfill gas operating temperature
- Specific gravity of the landfill gas
- Absolute viscosity of landfill gas

The design process for sizing pipe begins with the development of the landfill gas flow rates for use in the computer program. Based on the conceptual design and a general understanding of the planned phasing of the landfill, the total landfill gas flow for a landfill is divided into various amounts to simulate varied flow rates at the wellheads over the life of the site. The user of the computer program constructs the system in the computer by drawing the system as it will appear in the field, and then adjusts the necessary pipe lengths and locations of wells (nodes) as required. Site specific conditions are considered when laying out a system. No elevations are used for the various nodes in this analysis. It is assumed that all landfill gas flow will proceed through the system regardless of node elevations.

Lastly, a pipe diameter (in inches) is calculated for the pipe segment. The flow velocity and pressure drop per unit foot are calculated for the diameter of pipe selected. Typically, if the gas velocity is greater than 40 feet per second for gas flowing in the same direction as condensate, or greater than 20 feet per second for gas flowing in the opposite direction as condensate, then a larger pipe diameter is chosen. This continues until a pipe size is found that meets the pressure and velocity criteria.

The header piping proposed for installation at this facility will be made from high density polyethylene (HDPE) or an equivalent material. Polyethylene pipe is ideal due to its compatibility with landfill gas and waste, its flexibility (if settlement occurs), its long term stability and its excellent chemical resistance.

To establish the header line sizes, the applicant used the KYPIPE Pipe2010 computer Program, Version 5.001, 12/10/09 by KYPIPE LLC, Lexington, Kentucky. For thirty years, KYPipe has developed and provided support for pipe system hydraulic flow analysis software. The strength and flexibility of the Pipe2010 suite of engines has made KYPipe an industry leader and made their software the most widely used pipe system hydraulic flow analysis software in the world. The Pipe2010 suite of software utilizes a consistent, intuitive Graphical User Interface; allowing the user to transition easily and efficiently between engines. Pipe 2010 is a Steady, one-dimensional, isothermal flow for ideal, and non-ideal variable density gases. Also includes the ability to account for temperature variations. Ideal natural gas distribution and landfill gas collection.

Control valves are proposed to be located throughout the collection header network. The valves can manually shut off the applied vacuum to a particular section of header pipe. This allows portions of the well field to be isolated for monitoring and maintenance purposes. Blind flanges have been incorporated in the NSPS design in order to allow for future gas system expansions. The header system designed for this project will meet the requirements listed in 40 CFR 60.759: gas system expandability, accessibility, corrosion resistance, fill settlement, required materials of construction, and ability to withstand planned overburden or traffic loads.

8. Sizing The Blower and the Flare {40 CFR §60.759(c)}:
The landfill is designed to have one flare location that serve as control devices for the landfill. The negative pressure provided by the two 1500 scfm blowers shall be cable of overcoming the head loss through the pipe network at the maximum gas flow rate while maintaining sufficient vacuum at the wellheads at all times, and supplying adequate positive pressure for delivery of the collected landfill to the engines and the flare at the current landfill gas generation rate.

The control system will be monitored for flow at least once every 15 minutes. The temperature in the gas combustion zone or pilot will also be monitored and recorded to determine the presence of a flame in the flares. Since there will be no bypass device, there is no need to monitor the bypass flow or valve seal to a bypass device. The system is equipped with a fail-safe valve that will close and not permit gas to flow through the flare when the flare is not operating.

The critical flow paths were selected in an attempt to define the most critical flow path for the landfill gas. In addition to the losses in the gas collection and control system, the blower should be capable of providing a sufficient vacuum for gas extraction. The blower therefore must be capable of providing the following:

(P_{total}) at the peak design gas flow rate.

$P_{total} = \Delta h_w + P_f + P_w$

Where: Δh_w = head loss in inches of water column
P_f = back pressure needed to deliver the landfill gas to the flare
P_w = minimum vacuum needed at any extraction well

This site has a gas collection and control system over a portion of the landfill. The volume of gas currently (2011) extracted is approximately 1442 scfm. The current flare and blower system (3000 scfm) is more than capable of collecting and controlling the current rate of landfill gas generation. The volume of gas will increase as waste is placed. The site will expand the blower/flare station to exceed the design peak flow rate when necessary.

9. Cover Properties {40CFR §60.759(a)(1)}:
The applicant states that the final cover is designed and will be installed in accordance with Subtitle D standards. The cover system will minimize infiltration of leachate. Additionally, the final cover enhances the collection LFG by providing a barrier to LFG emissions and by minimizing air infiltration during operation of the active gas collection and control system.

The final cap at the Uwharrie Landfill will consist of both natural soil and synthetic liner components. The final cap components is ascending order are:
- 12 inches of compacted soil,
- 40 mil flexible membrane liner (FML),
- Geocomposit drainage layer, and
- 18 inches of vegetative soil cover.

Compliance is indicated.

10. Expandability of System {40 CFR §60.759(a)(1)}:
Expansion of the GCCS is achieved by installing blind flanges through the intermediate system build-outs. This facilitates connection of future expansions to the existing active system. The sizing of the gas collection and control system also includes safety factors to make sure that the capacity is sufficient to accommodate the estimated gas extraction rate.

Compliance is indicated.

11. Offsite Migration {40 CFR §60.752(b)(2)(ii)}
The installation of an active gas collection and control system causes an inward pressure gradient at the landfill, which will serve to minimize off-site subsurface migration of landfill gas and air emissions. The facility's base and side-slope liners will also serve to deter subsurface migration. The facility currently performs perimeter landfill gas monitoring. This monitoring will be a tool to assist in evaluating the effectiveness of the gas collection and control system at minimizing off-site migration of landfill gas.

12. Leachate and Condensate Systems:
    Condensate is produced during the collection and transportation of landfill gas. This condensate must be removed from the collection system pipe network, or it will eventually fill up the conveyance system and "choke" the gas flow.

    Landfill gas condensate is currently collected from the low points of the gas header line via condensate traps and sumps. The traps and sumps are located in the system to maximize condensate collection efficiency. Condensate traps installed in waste will gravity drain into the leachate collection system or back into the waste mass. Condensate collected outside the limits of waste and at the flare station is transferred to sumps and then pumped to the leachate collection system.

D. The applicant appears to adequately covered the NSPS, Subpart WWW requirements for monitoring, recordkeeping, and reporting in the revised gas collection and design plan.

E. Requested Alternative Monitoring, Recordkeeping, and Reporting Procedures {40 CFR §60.756(e):
Per 40 CFR §60.752(b)(2)(i)(B), the design plan shall include proposed alternatives to the prescriptive monitoring, recordkeeping and reporting requirement outlined in the NSPS. East Carolina Regional Landfill has requested the following alternative monitoring, recordkeeping, and reporting procedures.
   1. Per Section §60.753(a)(1) "Operation Standards for Collection and Control Systems" the regulation states:
      a. "Operate the collection system such that gas is collected from each area, cell, or group of cells in the landfill in which solid waste has been in place for 5 years more if active, or 2 years or more if closed or at final grade."
         i. The East Carolina Regional Landfill is proposing to only install permanent gas wells in areas once final grades are reached and the site has been active for 5 years or more or closed, or at final grade for 2 years or more. For areas that have been active for 5 years or more and are not yet to final grades, the leachate collection system or temporary gas extraction wells and horizontal collectors may be used for gas extraction until the wells can be installed (i.e. final grades have been reached).

            In accordance with the U.S. Environmental Protection Agency Applicability Determination Index, Control Number 0400033 (question 2) this is an acceptable alternate operating scenario as long as they meet the requirements of 40 CFR 60.759 and are approved in the design plan.

   2. Per Section §60.753(b) "Operation Standards for Collection and Control Systems" the regulation states:
      a. "Operate the collection system with negative pressure at each wellhead except under the following conditions."
         i. a fire or increased well temperature.
         ii. use of a geomembrane liner or synthetic cover. The owner shall develop acceptable limits in the design plan.
         iii. a decommissioned well.

      The East Carolina Regional Landfill requests an acceptable limit of 5 inches of water column for wells in areas that have a geomembrane cover. Calculations were included in Appendix C of the application.

      In accordance with the U.S. Environmental Protection Agency Applicability Determination Index, Control Number 04000343 (question 12), this is an acceptable alternate operating scenario.

3. Per Section §60.753(c) "Operation Standards for Collection and Control Systems" the regulation states:
   a. "Operate each interior wellhead in the collection system with either a nitrogen level less than twenty percent or an oxygen level less than five percent. The owner or operator may establish a higher…nitrogen or oxygen value at a particular well. A higher operating value demonstration shall show supporting data that elevated parameter does not cause fires or significantly inhibit anaerobic decomposition by killing methanogens. "

      Leachate sump/riser connections:
      The existing gas extraction system has connections to leachate sumps and cleanout risers in order to extract gas from the leachate collection system for odor/surface emission control. Future expansions to the gas collection system may also utilize leachate manholes, sumps, and cleanout risers.

      A review of the monitoring data from other landfills shows that connecting to the leachate management system sometimes contains concentrations of nitrogen and oxygen similar to that of ambient air, above the NSPS thresholds. This is due to the fact that the leachate collection system is not an airtight vacuum system, and was not designed as such. However, it does provide valuable collection point for landfill gas. Unlike the vertical gas extraction wells, the leachate sump draws from the leachate collection system beneath the refuse. Therefore, concentrations of air within these extraction points will not cause subsurface oxidation within the refuse, as could potentially happen in a classic vertical extraction well within refuse.

      If the collection of landfill gas from the leachate system using leachate risers and leachate sump extraction is from an area or cell in which the initial solid waste has been in place for a period of five years or more (if active), or two years or more (if closed or at final grade), the temperature, pressure, nitrogen and/or oxygen shall not exceed the limits of Subpart WWW, except the oxygen limit shall be less than or equal to 20 percent, as long as subsurface oxidation and the killing of the methanogens does not occur. In accordance with the U.S. Environmental Protection Agency Applicability Determination Index, Control Number 0400033 (question 3 of letter response), this is an acceptable alternate operating scenario that can be approved in a revised design plan.

4. Per Section §60.753(c)(2) "Operation Standards for Collection and Control Systems" the regulation states:
   a. When applicable, the East Carolina Regional Landfill wishes to use an on-site multi-gas analyzer, in lieu of a laboratory method, for determining the oxygen content of the landfill gas at each well and monitoring point. The site will be using a portable meter, such as a GEM-2000 or equivalent, calibrated to the manufacturer's specifications, to determine the oxygen content of the gas. This has been previously approved by the U.S. EPA.

5. Per Section §60.753(d) "Operation Standards for Collection and Control Systems" the regulation states:
   a. The East Carolina Regional Landfill is proposing to exclude dangerous areas such as roads, the active area, traffic areas and slopes steeper than 4:1 from surface emissions monitoring requirements. In addition, the facility is requesting that areas with ongoing construction or reconstruction of the gas collection system be temporarily excluded from the surface scans, until such time as the collection system is completed and /or functional.

      According to a letter from NCDENR dated July 12, 2007, the "landfill is allowed to exclude dangerous areas with slopes steeper than 4:1 from surface monitoring requirements". The landfill is required to make visual inspections of the areas to detect elevated concentrations of methane which results in distressed vegetation, cracks and seeps in the covers.

6. Per Section §60.755(a)(3) "Compliance Provisions" the regulation states:
"For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with 60.752(b)(2)(ii)(A)(3), the owner or operator shall measure gauge pressure in the gas collection header at each individual well, monthly.";

   Per Section §60.755(a)(5) "Compliance Provisions" the regulation states:
"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 §60 .753(c)." and

   Per Section 60.756 Monitoring of Operations":
"Except as provided in §60.752(b)(2)(i)(B)…(a) Each owner of operator seeking to comply with §60.752(b)(2)(ii)(A) for an active gas collection system shall install a sampling port and a thermometer or other temperature measuring device at each wellhead and (1) Measure the gauge pressure in the gas collection header on a monthly basis as provided in §60.755(a)(3); (2) Monitor nitrogen or oxygen concentration in the landfill gas on a monthly basis as provided in 60.755(a)(5); and (3) Monitor temperature of the landfill gas on a monthly basis as provided in 60.755(a)(5)."

   New vertical gas extraction wells are often placed in the active area of the landfill several years before the waste has reached final grades. However, since the wells are placed in active areas, they periodically need to be "raised" in order to not be buried under lifts of trash. When they are raised, the HDPE lateral line which provides the applied vacuum is temporarily disconnected until the surrounding lift of trash is brought high enough to reconnect the well. The time frame between when a well is disconnected and raised, and when the waste height is high enough to reconnect the lateral, can often range from a few weeks to a few months. This can result in missed monthly readings at the well, since the well casing is too high for the technician to safely reach.

   Since NSPS Subpart WWW allows for exclusion of surface monitoring in dangerous areas of the landfill, the NCDENR has previously granted the following condition for when technician cannot safely take readings at wellheads. The facility is allowed to exclude the monthly readings (pressure, temperature, nitrogen or oxygen content) at a particular well as long as the well cannot be safely reached by a technician. If the facility cannot bring the waste height up to the new grade and reattach the well within a reasonable time (four months), then modifications to the lateral/wellhead would have to be made including lowering the well and reattaching the wellhead to begin the required monitoring. [Determination Index, Control Number 0900041 and 0900059]

7. Section §60.755(a)(3) and §60.755(a)(5) "Compliance Provisions":
This section requires the owner or operator to take corrective action to remedy GCCS operating and compliance monitoring exceedances within 5 calendar days. If the condition cannot be corrected within 15 days of the initial exceedance, the GCCS must be expanded within 120 days of the initial reported exceedance, or an alternate remedy to correct the exceedance(s) and a corresponding timeline for implementation may be submitted for agency approval.

   In the June 16, 1998 Federal Register, page 32748, Section I "Compliance Provisions", it states that Section 60.755(a)(3) is being revised to allow an alternative timeline to be proposed for correcting an exceedance in collection header pressure at each well. Consistent with section 60.755(c)(4)(v), a sentence is being added to sections 60.755(a)(3) and 60.755(a)(5) to allow an alternate timeline to be proposed to the Administrator for correcting an exceedance. This revision makes the sections consistent. Depending on the remedy selected to correct the problem, a different timeline may be needed, but any timeline extending more than 120 days must be approved by the regulatory agency.

   The DAQ will write a condition in the permit that states that alternative timelines that exceed 120 days requires approval from the DAQ.

8. Per Section §60.755(c)(4) "Compliance Provisions" the regulation states:
   Any reading of 500 ppm or more….shall be made and the location shall be re-monitored within 10 calendar days after detecting the exceedance…"

   East Carolina Regional Landfill is requesting a variance to the 10-day rescan time frame be extended by an additional 10 days, in the event of bad weather conditions after a quarterly subsurface scan (should it be determined that the cover was the cause of the failing reading).

   NSPS, Subpart WWW appears to already provide adequate time to remedy this problem. No additional time will be added.

9. Per Section §60.755(c)(5) "Compliance Provisions" the regulation states:
   The owner of operator shall implement a program to monitor for cover integrity and implement cover repairs as necessary on a monthly basis.

   East Carolina Regional Landfill is requesting that in areas where final cover has been installed, damage to the cover from erosion is expected to be minimal, as opposed to the unvegetated interim slopes at the active portions of the facility. Therefore they are proposing an annual inspection schedule for monitor the areas under final cover. The remaining areas will be monitored monthly while they are active, but after closure, it is requested that the cover monitoring frequency be reduced to annual as well.

   There were not any approvals of this request in the Applicability Determination. DAQ will not grant this request at this time.

10. Per Section §60.755(e) "Compliance Provisions" the regulation states:
    The provision of this Subpart 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.

    The applicant states that the landfill NESHAP (40 CFR Part 63, Subpart AAAA) requires the preparation of a startup, shutdown, and malfunction plan. The facility is requesting that the one-hour/five day shutdown limitation of the NSPS not apply to the facility now that the Landfill NESHAP has been promulgated.

    On October 16, 2009, the D.C. Circuit Court of Appeals issued a mandate vacating the Startup, Shutdown and Malfunction ("SSM") exemptions contained in the General Provisions of the National Emission Standards for Hazardous Air Pollutants ("NESHAP"), 40 C.F.R. §§ 63.6(f)(1) and 63.6(h)(1). See Sierra Club v. EPA, 551 F.3d 1019 (D.C. Cir. 2008). The vacatur directly affects the NESHAP source categories/Subparts that only incorporate 40 C.F.R. §§ 63.6(f)(1) and 63.6(h)(1) by reference or and that include specific regulatory text in lieu of the reference, and does not contain any other source specific exemption for SSM events. The Court's vacatur does not directly impact those source categories that include a separate exemption or otherwise excuse compliance during SSM events because these other provisions were not challenged. MACT Subpart AAAA is one those affected by this vacatur.

    There were not any approvals of this request in the Applicability Determination. DAQ will not grant this request at this time.

11. Per Section §60.756(c) "Monitoring of Operations" the regulation states:
The owner or operator shall either: (i) Install, calibrate, and maintain a gas flow rate measuring device that shall record the flow to the control device at least every 15 minutes; or (ii) Secure the bypass line valve in the closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once every month to ensure that the valve is maintained through the by-pass line.

    The facility is asking that this requirement not apply to their system because it is designed such that it does not have a physical means to bypass the gas flow before it reaches the control device. This question was submitted to the US EPA for clarification and was answered in previous applicability determinations stating that if a gccs does not contain any bypasses of the flare, the requirement to record flow or bypass of the flare is not applicable.

12. Per §60.753(b)(3) "Operational Standards For Collection and Control Systems" :

    Wells that experience positive pressure after being shutdown to accommodate declining landfill gas flow rates can be decommissioned if permission is granted by the Administrator. As an alternative to decommissioning wells under the provisions, Bertie County has proposed to make the following changes to its standard operating procedure for wells where persistent oxygen exceedances are not the result of operations and/or maintenance issues:
    a. Wells where oxygen concentrations do not decline to acceptable levels after more than one hour of reduced vacuum will be shut off until the gas quality recovers.
    b. The monthly monitoring required by 40 CFR Sec. 60.755 will be conducted for wells that have been shutdown, but positive pressure or elevated oxygen concentrations will not be considered exceedances of the operating limits in 40 CFR Sec. 60.753.
    c. If monthly monitoring indicates that pressure has built up in the well and the oxygen concentration still exceeds five percent, the well will be opened to relieve the pressure and will be shutdown until it is monitored the following month.
    d. If the monthly monitoring indicates that gas quality has improved (i.e., the oxygen concentration has dropped below five percent), the well will be brought back on line until the gas quality declines again.
    e. The quarterly methane surface concentration monitoring required under 40 CFR Sec. 60.755 will be conducted for wells that have been shutdown. Standard remediation steps, including evaluating the need to return wells to full-time service, will be followed if exceedances of the 500 ppm methane surface concentration limit are detected.

    There is a high probability of gas quality improving to the point it would be necessary to restart wells that had been shutdown. Based upon our review, the proposed changes to this County's standard operating procedures are acceptable because shutting down nonproductive wells, instead of decommissioning them, has the potential to lower overall nonmethane organic compound (NMOC) emissions at the landfill. This potential increase in NMOC control system efficiency stems from the ability to quickly resume gas collection if there are improvements in the gas quality or increases in the gas production rate in an area of the landfill where wells have become nonproductive. If wells in a nonproductive area are decommissioned, instead of merely being shutdown, NMOC emissions would not be controlled between the time an exceedance is identified and a new well is installed. Once condition for approval of the proposed changes in standard operating procedures at the Orange County Solid Waste Management Facility is that facility diagrams must be updated to indicate which wells have been shutdown because landfill gas production rates are too low to permit continuous extraction.

    The US EPA approved the alternative operating procedure listed above as long as the facility diagrams are updated to indicate which wells have been shutdown because landfill gas production rates are too low to permit continuous extraction. The EPA states that shutting down nonproductive wells, rather than decommissioning them, has the potential to lower overall non-methane organic compounds emissions by making it easier to resume gas collection in nonproductive areas of the landfill that subsequently experience an improvement in gas quality. [Applicability Determination Control No. 0600062]

13. Per §60.755(a)(4) "Compliance Provisions" the regulation states:

    For the purpose of demonstrating whether the gas collection system flow rate is sufficient to determine compliance with §60.752(b)(2)(ii)(A)(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 §60.753(b). 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. Owners or operators are not required to expand the system as required in paragraph (a)(3) of this section during the first 180 days after gas collection system startup.

    In accordance with 40 CFR §60.755(a)(3) and §60.755(a)(5) "Compliance Provisions", owner or operator shall take corrective action to remedy gas collection and control system operating and compliance monitoring exceedances within 5 calendar days. If the condition cannot be corrected within 15 days of the initial exceedance, the GCCS must be expanded within 120 days of the initial reported exceedance, or an alternate remedy to correct the exceedance(s). Any timeline extending more than 120 shall be approved by the Washington Regional Office.

14. Use of Alternative Sampling Method:
    The East Carolina Regional Solid Waste Landfill wishes to use USEPA Method 3C or ASTM D3588 in place of Method 18 and ASTM D1946 to determine landfill gas components for calculating net heating value under 60.18(c)(3). 40 CFR 60.18 requires the use of Method 18, however USEPA's Office of Air Quality Planning and Standards regularly authorizes the use of Method 3C or ASTM D3588. [EPA approval letter to Ms. Erin Conklin of SCS Engineers, dated April 19, 2005 for a similar landfill]

V. Conclusions:

Based upon industry standards and assumptions used in the previous years of landfill gas collection and control system design, the East Carolina Regional Solid Waste Landfill located in Aulander, Bertie County, North Carolina appears to have a revised gas collection and control system that will meet the compliance requirements of NSPS, Subpart WWW "Standards of Performance for Municipal Solid Waste landfills".

This gas collection and control system appears to have been designed such that:

- the system will effectively collect the maximum expected landfill gas generated at the site for the intended use period for this system;
- the system will effectively collect and control the landfill gas generated in the waste that has been in-place at the facility for five years or more;
- the system includes the ability to add more collectors to the system as required;
- the system will reduce nonmethane organic compounds (NMOC) by 98 percent by transporting the landfill gas to onsite one open flare that meets the requirements of 40 CFR Part 60, §60.18;
- the system controls odorous emissions from the landfill;
- the system controls subsurface landfill gas migration at the site;
- the system effectively controls air emissions from the site;
- the system collects and manages leachate and condensate in the waste; and
- the system has been designed to account for waste settlement.

VI. Recommendations:

This design plan for the East Carolina Regional Solid Waste Landfill, located in Aulander, Bertie County, North Carolina has been reviewed by the DAQ (Booker T. Pullen) to determine compliance with all procedures and requirements in accordance with 40 CFR Part 60, Subpart WWW. This design plan does indicate that the facility will be in compliance with the NSPS, Subpart WWW requirements to effectively collect the maximum expected landfill gas generated at the site for the intended use period of the designed system and will be in compliance with collection of landfill gas from the waste that has been in-place for a period of five years or more via a professionally designed gas collection and control system.

The DAQ recommends the approval of the revised gas collection and control system design plan. This plan appears to be adequately designed to collect and control the current sections of the landfill where waste has been in place for five years or more, and future accumulated municipal solid.

VII. A Professional Engineers Seal is not required for this renewal application because there are no new sources being added. A Professional Engineers seal was provided for the revised gas collection and control system.

VIII. A zoning consistency determination is not required for this renewal application. .

IX. An application fee is not required for this renewal application.

X. The appropriate number of copies of the application was received by the DAQ on March 31, 2010.

XI. The application was signed by the appropriate official.

XII. PSD does not apply for this renewal.

XIII. Public Notice
A thirty-day public notice and forty-five day EPA review period is required.

Public notice: The 30 day public notice period was from December __2011 through XXX___2012. No public comments were received for this permit application.

EPA 45-Day review Period: The DAQ sent copies of the appropriate information to the USEPA on ___2011. The EPA 45-day review period was from _____2011 through _____2012. The USEPA ____ have any adverse comments on the renewal permit for this facility.

XIV. A revised gas collection and control system was submitted to the DAQ along with the renewal application containing proposed alternatives to the operation, monitoring, recordkeeping, and reporting requirements of the currently permitted gas collection and control system. The DAQ approved the appropriate alternatives and included the approved alternatives to the design plan in the Air permit.

XV. This facility is not subject to 15A NCAC 2Q .0508(g) "Prevention of Accidental Releases" because it does not store any of the listed 112(r) chemicals in quantities above the thresholds.

XVI. Ozone Nonattainment:
Bertie County is not currently designated as nonattainment for the eight-hour ozone standard. Nonattainment does not apply for this renewal application.

XVII. Recommendations:
This application renewal for the East Carolina Regional Solid Waste Landfill, located at 1922 Republican Road, Aulander, North Carolina, has been reviewed by the DAQ to determine compliance with all procedures and requirements. The Washington Regional Office made comments prior to the review and on the draft permit. The DAQ has determined that this facility is complying or will achieve compliance as specified in the permit with all applicable requirements. The Washington Regional Office concurs with the issuance of this Air Permit.

Issue permit No. 08849T04.