

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
INTRA-AGENCY MEMORANDUM
Engineering Analysis

Permit Writer	Erica D. Sveum
Air Permit Manager	James E. Kyle
Memo To	Air Permit File
Date	DRAFT
Facility Name	INGENCO – Charles City Plant
Registration Number	51998
Application No.	26
Date Fee Paid	2/4/2021 and 8/20/21
Amount (\$)	\$5,669 (NSR for sources subject to TV) +\$22,678 (additional required for major mod of state major source) = \$28,347 Application Fee Major Modification at State Major
Distance to SNP (km)	>100 km
Distance to JRF (km)	>100 km
FLM Notification (Y/N)	N
Application Fee Classification (Title V, Synthetic Minor, True Minor)	Title V
Permit Writer Signature	
Permit Manager Signature	

I. Introduction

INGENCO Wholesale Power, LLC (INGENCO) owns and operates a landfill gas to energy facility located at 7960 Chambers Road in Charles City, VA. The INGENCO - Charles City Plant (Charles City Plant) is one of several facilities in the state operated by INGENCO with most adjacent to a separately permitted municipal solid waste (MSW) landfill that provides treated landfill gas (LFG) as fuel for power generating engines. The Charles City Plant is adjacent to and receives its treated LFG from the Charles City County Landfill (CCC Landfill) (Registration No. 51254). The Charles City Plant and the CCC Landfill are not considered a single stationary source under the PSD and TV regulations.

On February 3, 2021, the Piedmont Regional Office (PRO) of the Department of Environmental Quality (DEQ) received a minor New Source Review (NSR or Article 6) permit application dated January 28, 2021. INGENCO applied for a permit to install and operate a leachate concentrator (evaporator) paired with an enclosed flare at the Charles City Plant. The enclosed flare will combust LFG providing thermal heat to the concentrator to reduce the volume of the adjacent CCC Landfill's leachate. Leachate will be transferred from the existing tanks at the adjacent landfill to INGENCO's property to be evaporated. Remaining solids will be disposed at the CCC Landfill, accordingly. CCC Landfill will continue to maintain the ability to transport leachate to an off-site waste water treatment plant for treatment and disposal in the event that the Charles City Plant's leachate concentrator experiences a shutdown. The landfill is not solely dependent on INGENCO's leachate concentrator system for the management of leachate.

Currently, Charles City Plant is subject to a minor NSR Permit dated August 18, 2020 and a Title V permit renewal issued on March 23, 2012 (currently under application shield). The facility is a state major and Title V source for nitrogen oxides (NO_x) and carbon monoxide (CO), a minor source of state toxics (area source for hazardous air pollutants (HAP)) and is a Prevention of Significant Deterioration (PSD) minor source. There is a finite amount of landfill gas available to INGENCO from the landfill process. The existing permitted emissions cap for the engines is not changing. The tradeoff of operating the concentrator system will be fewer engines operating on LFG. However, the ability to burn liquid fuels in the engines allows for potential emissions from the entire facility to be at PSD major levels. After this permit action, the facility will be a state major source for NO_x, CO and sulfur dioxide (SO₂) and become a PSD major source for NO_x and CO.

An application review letter with a preliminary draft permit and comments for discussion/consideration were emailed to INGENCO on February 23, 2021. On March 31, 2021, INGENCO submitted additional information and revised calculations to include particulate emissions not previously considered from the dissolved solids contained in the leachate. These calculations showed an increase in the facility's potential to emit particulate above the significance threshold resulting in a major modification of a state major source. A revised application and document certification were received on July 12, 2021 with the additional application fee posted on August 3, 2021 and the LGBCF received on August 12, 2021. Beginning October 1, 2021, several preliminary working drafts were exchanged to reconcile these changes. On November 2, 2021, the final revised calculations were received increasing the maximum projected LFG flow and resulting emissions slightly. Later, additional omissions, incorrect hourly or annual thresholds, and formula references were corrected by DEQ and presented to INGENCO for review. The hourly and annual thresholds from DEQ's Toxics_Spreadsheet.xlsx¹ were used and toluene was added to the spreadsheet for quantifying emissions from the flaring of LFG. INGENCO provided a corrected spreadsheet implementing the requested corrections (tab titled LFG Toxics) on December 9, 2021.

Charles City County is located in the State Capital Intrastate Air Quality Control Region, Richmond Ozone Maintenance Area and Richmond Emissions Control Area (NO_x and VOC); the region is in attainment for all pollutants. The location is suitable from an air pollution standpoint. A Local Governing Body Certification Form (LGBCF) is required since this permit action is a major modification to a state major source. On July 16, 2021, the county of Charles City certified that the location and operation of the facility are consistent with all applicable ordinances adopted pursuant to Chapter 22 (§15.2-2200 et seq.) of Title 15.2 of the Code of Virginia. The LGBCF was received via email on August 12, 2021.

A Full Compliance Evaluation (FCE) was conducted on January 11, 2021. Compliance staff determined that the facility was in compliance with their minor NSR and TV permits for the landfill gas to energy plant.

¹ Calculated exemption levels and SAACs for each Air Toxic Pollutant located at <https://www.deq.virginia.gov/permits-regulations/permits/air>

II. Emission Unit(s) / Process Description(s)

Existing – Electrical Power Generating Plant – Landfill Gas to Energy – Diesel Engines and Secondary LFG Treatment

This permit application does not involve any modifications to the existing engines, exempt equipment, or landfill gas treatment system described below but is provided here for informational purposes. The LFG will be combusted in the proposed evaporator/flare with remaining to the existing engines.

INGENCO's Charles City Plant consists of 48 compression ignition reciprocating internal combustion engines are arranged in eight groups of six engines are capable of 16 MW of electricity. The 550 HP engines were rebuilt to 6063 GK60 specifications and rerated to 475 HP during the installation of the propriety control module (PCM). Each engine drives a 350kW generator. The engines are fired primarily on landfill gas up to 98% gas fraction on an annual average. The engines emit combustion products. NO_x and CO emissions are based on the fuel mix, VOC emissions are based on site specific emission factors, particulate (PM10 and PM2.5) emissions are based on AP-42, and SO₂ emissions are based on the fuel sulfur content of liquid fuel and/or the total reduced sulfur (TRS) contained in the landfill gas. Exempt equipment includes: four 30,000 gallon fuel oil storage tanks, two 1,000 gallon lubrication oil storage tanks, one 275 gallon heating oil tank and one 0.229 MMBtu/hr distillate oil boiler.

All landfill gas consumed by the engines must be processed through the landfill gas treatment system composed of de-watering, filtration, and compression processes at the CCC Landfill before off-site use. Charles City Plant has its own de-watering, filtration, and compression processes as well. The LFG to energy plant can also burn distillate, No. 4 oil, or biodiesel in its engines. To date, the Charles City Plant has not utilized No. 4 oil or biodiesel. Optimal fuel mix is 98% LFG with 2% liquid fuel in a dual fuel mode.

Proposed – Leachate Concentrator Plant – Enclosed Flare and Leachate Concentrator

The proposed project is for construction and operation of a Heartland Water Technology leachate concentrator system. The Heartland Concentrator™ is a direct-contact evaporator where hot gases are mixed with wastewater in a proprietary Low Momentum - High Turbulence (LM-HT®) process². This system is proposed as a secondary method to the traditional "pump and haul" to a waste water treatment plant currently utilized by CCC Landfill.

The leachate concentrator is equipped with an enclosed flare utilizing LFG to provide heat to evaporate liquid from the collected leachate. The remaining slurry is temporarily stored and transferred back to the CCC Landfill. The leachate concentrator system is expected to combust up to 1008 scfm of landfill gas and evaporate up to 55,000 gallons of leachate per day.

The burning of landfill gas produces combustion products. INGENCO calculated estimates of the maximum potential emissions from the flare based on: manufacturer's guarantee for NO_x and CO; AP-42 for VOC and PM; and the maximum total reduced sulfur/H₂S contained in the landfill gas for SO₂. A safety factor was added to these predicted emissions considering the variability of the LFG entering the system. The evaporation of leachate emits PM10/2.5 and VOC. INGENCO

² <https://www.heartlandtech.com/lm-ht-concentrator-1>

calculated estimates of the maximum potential emissions from the concentrator based on the worst case leachate sample data obtained from the past year for total solids (particulate) and volatiles (VOC). The estimated particulate emissions takes into account the exhaust (mostly water vapor) exiting through an integrated mist eliminator with 1% of the total solids in leachate emitted as particulate. The mist eliminator condenses large water droplets and returns most of the entrained liquid back into the evaporator. This design obtains a 99% capture efficiency which greatly reduces the entrained solids in the water vapor exiting the stack.

In addition to criteria pollutants, both the burning of landfill gas and evaporation of leachate produce air toxics or hazardous air pollutants. INGENCO calculated emissions from the burning landfill gas based on analytical data from site-specific sampling using EPA Method TO-15 *Determination of Volatile Organic Compounds (VOCs) in Air* for compounds analyzed in landfill gas. If the results were non-detect, the detection limit value was used. For compounds not included in site-specific analysis, the US EPA concentrations were taken directly from AP-42, Fifth Edition, Volume I Chapter 2: Solid Waste Disposal – 2.4 Municipal Solid Waste Landfills, Final Section tables 2.4-1 and 2.4-2 (11/98). For a conservative estimate, the maximum of the concentrations from either sampling or AP-42 described above were used to calculate the potential emissions. For the leachate, INGENCO calculated emissions based on concentrations of VOCs and toxics/HAPs from an EPA guidance document titled, *Development Document for Final Effluent Limitation Guidelines and Standards for the Landfills Point Source Category* Tables 5-3 and 6-13 for raw wastewater.

Emissions from the leachate concentrator system exit through one combined stack (flare combustion emissions and leachate evaporation combined).

III. Regulatory Review

A. 9VAC5 Chapter 80, Part II, Article 6 – Minor New Source Review

The provisions of Article 6³ apply throughout Virginia to (i) the construction of any new stationary source, (ii) the construction of any project (which includes the affected emissions units), and (iii) the reduction of any stack outlet elevation at any stationary source.

The application is a request for a change that meets the definition of “project” contained in 9VAC5-80-1110 C. To be exempt from permitting, the regulations provide that a project must be exempt under both the provisions of 9VAC5-80-1105 B through D as a group and the provisions of 9VAC5-80-1105 E and F.

The project has no affected emissions units listed in 9VAC5-80-1105 B. In determining if a project is exempt under 9VAC5-80-1105 D, a calculation of the uncontrolled emission rate (UER) increase from the project is required. The project’s increase is the sum of the UER increases from each affected emissions unit not listed in 9VAC5-80-1105 B.

INGENCO provided an application (original and revised) and supplemental calculations in which DEQ verified the emissions to be appropriate. See Section II and attached spreadsheets

³ Language is paraphrased from 9VAC5-80-1100.

for details. Potential emissions are based on the worst-case emissions from the operation of the leachate concentrator system at the maximum rated capacity. CUE for the leachate evaporator system is zero. NUE is based on operating the concentrator system under the worst case parameters for both the landfill gas and leachate while operating for 8760 hours/year.

As shown in the summary table below, the project’s increase for SO₂, PM/PM10/PM2.5, NO_x and VOC exceeds the respective permitting threshold; therefore, the project is subject to the permitting requirements of Article 6.

Pollutant	CUE (TPY)	Leachate Concentrator + Flare NUE (TPY)	UER Increase (TPY)	Exemption (Project) (TPY)	Subject to mNSR and BACT?
SO ₂	0	24.45*	<u>24.45</u>	10	<u>Y</u>
PM	0	13.29** + 3.94	<u>17.24</u>	15	<u>Y</u>
PM10	0	13.29** + 3.94	<u>17.24</u>	10	<u>Y</u>
PM2.5	0	13.29** + 3.94	<u>17.24</u>	6	<u>Y</u>
CO	0	32.85	32.85	100	N
NO _x	0	13.14	<u>13.14</u>	10	<u>Y</u>
VOC	0	14.33*+3.94=17.87	<u>18.27</u>	10	<u>Y</u>

*flare emissions are conservatively based on 545 ppmv H₂S and 50% CH₄ in LFG – actuals could vary and H₂S is likely much lower

**leachate concentrator emissions include the integrated mist eliminator; conservatively assumes PM = PM10 = PM2.5

As shown in the attached calculations provided by INGENCO and as explained in Section II of this analysis, the affected emissions units do not emit any toxic pollutant at a rate greater than the respective exemption rates in 9VAC5-60-300C. Therefore, the project is exempt from the state toxics rule (9VAC5-80-1105E) and is not subject to Article 6 for toxic pollutant emissions.

The facility is a state major source⁴ with a potential to emit (PTE) NO_x and CO (and SO₂ after the project) greater than 100 tons per year. State major modifications occur if the change in PTE (i.e., the difference between the allowables after permit issuance and allowables prior to the project) is greater than the “significant” value in 9VAC5-80-1110 C. See Section V table that shows the PM10 and PM2.5 increases as a result of the project are greater than the significant value. This project is considered a major modification to a state major source (state major modification). Public participation requirements are discussed in Section X.

B. 9VAC5 Chapter 80, Part II, Article 8 and Article 9 – Prevention of Significant Deterioration (PSD) Major New Source Review and Non-Attainment Major New Source Review

⁴ The term “major source” is the defined term; however, several different definitions of major source may apply at a given facility (e.g., Article 6, Article 8, Title V, HAP). In clarifying which definition of major source applies, “state major” is the common terminology to indicate the source is major under the definition contained in 9VAC5-80 Article 6, minor new source review.

Charles City County is a PSD area for all pollutants as designated in 9VAC5-20-205. The facility is not one of the listed categories subject to the 100 TPY major stationary source threshold; therefore, it is in the 250 TPY major stationary source category. Currently, the facility is a PSD minor source and the project by itself does not have a major stationary source PTE. PSD review does not apply. After this project, the facility has the potential to emit regulated NSR pollutants, NO_x and CO, at major stationary source thresholds; PSD review will apply for future projects.

C. 9VAC5 Chapter 80, Part II, Article 5 – State Operating Permit (SOP)

SOPs can be used to establish federally enforceable limits on potential to emit to avoid major New Source Review permitting (PSD and Nonattainment permits), Title V permitting, and/or major source MACT applicability. A SOP is not applicable for this permit action.

D. 9VAC5 Chapter 50, Part II, Article 5 – NSPS

There are no applicable NSPS (40 CFR Part 60) standards for the proposed leachate concentrator system.

Electrical Power Generating Plant applicable subparts:

- 40 CFR Part 60 Subpart IIII, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*. This permit action doesn't change the applicability of the existing engine-generators. The 48 dual-fuel diesel engines were manufactured before the applicability date and are not subject to Subpart IIII unless they are modified.

Inapplicable subpart(s):

- 40 CFR Part 60 Subpart WWW, *Standards of Performance for Municipal Solid Waste Landfills That Commence Construction, Reconstruction, or Modification on or after May 30, 1991, but Before July 18, 2014*. NSPS WWW has been replaced by the approved state plan in Virginia's regulations (Rule 4-43.1) that implements the Emission Guidelines of 40 CFR 60 Subpart Cf.

Previous engineering analyses stated, "Since the issuance of the initial NSR permit in 2004, EPA has issued multiple determinations concluding that LFG treatment processes are affected facilities, apart from the gas collection system operated by the associated landfill; (the Charles City County Landfill also has NSPS WWW applicable requirements in its air permits). INGENCO operates the equipment that filters, dewateres, and compresses the LFG that was collected by the landfill operator and is thus subject pursuant to the current NSPS WWW. The current permit already incorporates the emission control, monitoring, and recordkeeping requirements from the NSPS (as signified by the citation 9 VAC 5-50-410). Once the LFG has been treated and sent to the engines, it is no longer subject to the requirements. Consequently, the engines are considered energy recovery rather than NMOC control devices and are not subject to any part of the standard."

Even though the project did not involve the engines, it was important to review these statements and applicability determinations. The Charles City Plant is not a municipal

solid waste landfill, as such, is not applicable to Rule 4-43.1 (or NSPS WWW as previously stated in permit conditions). The State Plan, Emission Guidelines or NSPS can be used as the basis of permit conditions, but should not be referenced directly if not applicable to the source. With this action, citations of 9 VAC5-80-410 and references to NSPS WWW were removed.

The landfill gas entering the energy plant and proposed leachate concentrator system has been collected and transported to a treatment system that processes the collected gas for subsequent sale in compliance with NSPS/EG/MACT. The INGENCO operated filter and dewatering tank at the Charles City Plant are backup to the Charles City County Landfill gas treatment system.

E. 9VAC5 Chapter 60, Part II, Article 1 – NESHAPS

There are no applicable NESHAPS (40 CFR Part 61) standards.

F. 9VAC5 Chapter 60, Part II, Article 2 – MACT

There are no applicable MACT (40 CFR Part 63) standards for the proposed leachate concentrator system.

Electrical Power Generating Plant applicable subparts:

- 40 CFR Part 63 Subpart ZZZZ, *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)*. This permit action doesn't change the applicability of the engines to Subpart ZZZZ. The existing stationary RICE located at area sources of HAP emissions must comply with maintenance practices.
- 40 CFR Part 63 Subpart JJJJJ, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*. This permit action doesn't change the applicability of the boiler to Subpart JJJJJ. The exempt boiler requires an initial tune-up and every 5 years thereafter.

Applicability is noted in the cover letter and specific MACT conditions will be included in the TV permit.

G. State Only Enforceable (SOE) Requirements (9VAC5-80-1120 F)

There are no state only enforceable requirements associated with this permit action.

H. 9VAC5 Chapter 40, Part II, Existing Sources - Emission Standards

While Chapter 40 standards do not apply to new and modified sources, 9VAC5-50-10 and 9VAC5-80-1100 provide that Chapter 40 applies in cases where those standards are more stringent. Any standard in the permit cannot be less stringent than an applicable Chapter 40 rule.

The following existing source regulations were reviewed as part of previous permit actions:

- Rule 4-8 Emission Standards for Fuel Burning Equipment – does not apply to engines

- Rule 4-43.1 Emission Standards for Municipal Solid Waste Landfills for which Construction, Reconstruction, or Modification was Commenced on or before July 17, 2014 – INGENCO - Charles City Plant is not a landfill

IV. Best Available Control Technology Review (BACT)

BACT applicability is pollutant-by-pollutant based on the permitting applicability thresholds. Each affected emissions unit emitting a pollutant that is subject to permitting shall apply BACT for that pollutant (9 VAC 5-50-260 C. for projects). BACT is applicable for particulates (PM10/PM2.5), SO₂, NO_x and VOC.

Under the minor NSR permitting program, a State BACT review typically does not involve a traditional “top-down” analysis. The proposed BACT is consistent with landfills with similar operations.

Particulate matter emitted is assumed to be fine particulate, thus PM is equal to PM10 and PM2.5. The leachate concentrator is designed with a 3-stage mist elimination system to separate the liquid and vapor phases from the leachate evaporation process. This system retains at least 99% of the total solids. The leachate concentrator with integrated mist eliminator operated in accordance the manufacture specifications meets BACT to minimize particulate emissions.

SO₂ emissions from the combustion of LFG in the concentrator system is based on the maximum hydrogen sulfide (H₂S) levels in LFG derived from laboratory testing. The concentration is trending lower and based on methane content and flare capacity, the site specific emission factor of 0.19 lb/MMBtu for SO₂ was developed. The rrelatively low estimated emission rate of SO₂ would render add-on control equipment to be economically infeasible and, therefore, ensuring good combustion, proper operation and maintenance, as well as adherence to manufacturer requirements is considered BACT.

NO_x and VOC emissions from the combustion of LFG in the flare are based on vendor guarantees with a safety factor due to LFG variability. The proposed emission factors for the enclosed flare are 0.1 lb/MMBtu for NO_x and 0.25 lb/MMBtu for VOC. The flare, although not directly applicable to NSPS or MACT standards for landfills, employs temperature and gas flow rate monitoring devices like those required for landfill gas control. The flare effectively reduces VOC emissions from the landfill gas by 98%. The majority of VOCs are emitted from the volatilization of leachate in the evaporator. Use of VOC control equipment is not feasible due to the evaporative process and high moisture content Therefore ensuring good combustion practices, proper operation and maintenance , as well as adherence to manufacturer requirements is considered BACT. Emission reductions beyond the levels achieved by these work practices would be technologically and economically infeasible.

V. Summary of Potential Emissions Increase

The facility’s change in PTE is shown in the table below.

Pollutant	Past PTE (TPY)	Future PTE Engines + LC/EF (TPY)	PTE Change (TPY)	Significant Threshold (TPY)
SO ₂	85.7	85.7 + 24.5 = 110.2	24.5	40
PM	69.4	69.4 + 17.2 = 86.6	17.2	25
PM10	69.4	69.4 + 17.2 = 86.6	<u>17.2</u>	<u>15</u>
PM2.5	69.4	69.4 + 17.2 = 86.6	<u>17.2</u>	<u>10</u>
CO	240.0	240.0 + 32.9 = 272.9	32.9	100
NO _x	240.0	240.0 + 13.1 = 253.1	13.1	40
VOC	69.4	69.4 + 18.3 = 87.7	18.3	40

The potential emissions increase is from the proposed leachate concentrator system. There are no changes in the emissions from the engines since they are not included in the project.

The installation of the proposed leachate concentrator system will not increase the amount of landfill gas that will be sent to the facility. Some of the LFG will be diverted to the enclosed flare to heat the leachate in the evaporator rather than power the engines for electricity production. INGENCO did not propose reductions in the LFG that goes to the engines and the proposed flare is not a redundant emission unit, therefore, it is assumed that the emissions from the flare will be in addition to the already permitted engine emissions. The PTE includes proposed emissions from the leachate concentrator plus the flare added to the existing permitted emissions from the LFG/oil combustion in the engines.

Permitted emissions for the flare and evaporator are based on the worst-case emissions limited by the maximum rated capacity of the concentrator – 30 MMBtu/hr, 1008 cf/min, 50% methane and 922 Btu/cf LFG). See the attached calculations for additional details.

VI. Dispersion Modeling

A. Criteria Pollutants

As shown in the table in Section V, this project causes an increase in PTE greater than the respective value of “significant” in 9VAC 5-80-1110C. On August 4, 2021, the Office of Air Quality Assessments was contacted regarding the potential significant increase in PM10 and PM2.5 from the project. At this time, modeling for particulate increases from the project is not required.

B. Toxic Pollutants

Potential toxics emissions from the project were calculated by the facility to demonstrate the increase in emissions are exempt from permitting. Modeling is not required for a project that is exempt from the state toxics rule.

VII. Boilerplates and Boilerplate Deviations

The permit conforms to the latest boilerplate format (June 2019 ADA compatible version).

VIII. Compliance Demonstration

A. Initial (Stack Testing and Visual Emission Evaluation)

Since INGENCO-Charles City Plant is not a landfill utilizing the enclosed flare as control device, an initial stack test to demonstrate reduction in nonmethane organic compounds (NMOC) is not required. However, the vendor guarantees a 98% reduction in NMOC and 99.9% reduction in VOC from LFG combustion and provided “not to exceed” NO_x and CO emission factors. Furthermore, the vendor guarantees a 99% control of particulate from the leachate evaporation with a 3-stage mist eliminator.

An initial performance test for filterable and condensable particulate matter and a concurrent visible emission evaluation are being required for the leachate concentrator system to demonstrate compliance with the emission limits since the increase in particulate at the facility is considered a major modification of a state major source. Concurrently, VOC stack testing will be conducted and samples of leachate will be taken and analyzed for total dissolved solids and VOC to demonstrate compliance with the maximum values used as the basis of the emission limits.

B. Continuing (Compliance Emission Monitoring System, Monitoring, Recordkeeping, and Further Testing)

A CEMS is not required for this source type and the condensed water vapor steam plume wouldn't be favorable for a CEMS/COMS.

Monitoring of the flare includes installing, observing and keeping records of devices that measure combustion temperature and the landfill gas flow to the flare. Monitoring of the concentrator includes installing, observing and keeping records of devices that measure the leachate flow to the concentrator.

There are no changes to the previously established LFG TRS monitoring, testing and recordkeeping established for the existing engines. These periodic evaluations are also necessary to verify the SO₂ emissions from the flare. Additional annual measurements of total dissolved solids and VOC in leachate validates the site specific emission factors used as the basis of the permit emission limits from the operation of the leachate concentrator system.

DEQ reserves the right to require additional stack and VEE testing, as necessary, as stated in permit conditions.

IX. Title V Review – 9VAC5 Chapter 80 Part II Article 1 or Article 3

The facility is a Title V major source due to a potential to emit (PTE) greater than the applicable threshold (9VAC5-80-50C) for at least one regulated pollutant. The TV permit effective on March 23, 2012 is under permit application shield and pending renewal.

X. Public Participation and Notifications

As discussed in Section III.A, the project must meet additional requirements, mainly concerned with public participation, due to the state major modification status.

The Local Governing Body Certification, required under §10.1-1321.1, was signed on July 16, 2021 and received via email on August 12, 2021 (a second form was signed on August 7, 2021 and received via mail on August 16, 2021).

The following public participation information was published in the *New Kent-Charles City Chronicle* on December 16, 2021.

- The public comment period begins on December 16, 2021.
- The public briefing will be held at the Government Administrative Building, Auditorium, 10900 Courthouse Rd. in Charles City and is scheduled to begin at 5:30 on January 18, 2022.
- The public hearing will be held at the same location and date and is scheduled to begin at 6:00.
- The comment period will end on February 2, 2022.
- EPA, Region III was notified by letter dated December 16, 2021.

XI. Other Considerations

A. Confidentiality:

The applicant did not request confidentiality.

B. Permitting History:

This is the first permit for the leachate concentrator system. Permitting history for the Electrical Power Generating Plant (engines and LFG treatment system) is not included since this project does not change the previously permitted facility.

C. Permit Changes:

This permit supersedes the August 18, 2020 permit and combines the existing engine permit with the proposed leachate concentrator system permit. A stand-alone permit was not written for this project, since multiple conditions in the existing landfill gas to energy plant needed revision to terms such as “the facility” or “facility-wide” to allow emissions from other emission units rather than only the engines as the stationary source. INGENCO did not request to reduce any permitted emissions from the engines. This new project will result in potential emissions above those already permitted. Since the engines and the proposed leachate concentrator constitute two different uses of LFG and these plants operate independently, the permit was divided into two sections.

- Electrical Power Generating Plant – Landfill Gas to Energy – Diesel Engines (Ref. Nos. A1 – H6) and Secondary LFG Treatment
- Leachate Concentrator Plant - Enclosed Flare and Leachate Concentrator (Ref. Nos. EF-1 and LC-1)

Permit Introduction/Equipment List

Additions:

- Added permit application and subsequent information for the leachate concentrator system project
- Added leachate concentrator system (leachate concentrator and enclosed flare) to the equipment table

Electrical Power Generating Plant – Landfill Gas to Energy – Diesel Engines and Secondary LFG Treatment

Conditions revised to allow for the “facility” to include other emission units:

Some references to facility no longer apply to the entire stationary source since in addition to engines a leachate concentrator system is proposed.

- Condition 8, 19 and 30: added “electrical power generation” as modifier for facility
- Condition 17: changed “facility” to “48 dual-fuel diesel engines (A1-H6)” since INGENCO did not request to limit the LFG consumption in the concentrator system to maintain the NO_x and CO below 240 tons. This fuel throughput is for the engines only, not the entire facility
- Condition 23: removed “Facility-wide” and added “48 dual-fuel diesel engines” since the emission limits are for the engines only, not the entire facility

Conditions corrected:

- Condition 26 and 28: added back in “on a minimum of one set of six engines” previously removed in 2017 in error.
- Condition 15: removed “is required to comply with 40 CFR 60.752 (b)(2)(iii)(C) and”
- Multiple conditions: Removed 9 VAC5-50-410 (NSPS) citations and references to NSPS WWW⁵ since INGENCO is not a landfill. The landfill gas received at INGENCO has been treated per applicable federal requirements at the adjacent landfill as required for off-site use. INGENCO’s secondary treatment system is a backup.

Conditions removed:

- Previous Condition 32: Control Equipment Removal Notification – this condition pertains to landfills and the removal of LFG NMOC control flares. INGENCO- Charles City Plant is not a landfill, nor operates control flares.

Leachate Concentrator Plant - Enclosed Flare and Leachate Concentrator

Conditions added:

- Conditions 32-54: new conditions pertaining to the proposed flare and leachate concentrator
- General Condition 52: permit invalidation for the proposed flare and leachate concentrator

- D. Consistency: A review of files reveals that currently permitted enclosed flares and/or leachate evaporators are owned/operated and installed on landfill property and are subject to federal and state regulations for landfills. This proposed project occurs off of landfill property and is not subject to the same requirements including NMOC destruction testing. Monitoring, testing, and leachate sampling and analysis conditions were modeled after those applicable to the King George Landfill (Reg. No. 40903) and Maplewood Recycling and Waste Disposal (Reg. No. 30993).

XII. Recommendations

Approval of the draft permit is recommended.

Attachments

Source Calculations

⁵ NSPS Subpart WWW was replaced by the more stringent Rule 4-43.1 implementing Emission Guidelines under 40 CFR Part 60 Subpart Cf