



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

TIDEWATER REGIONAL OFFICE

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STATEMENT OF LEGAL AND FACTUAL BASIS

Hampton Roads Sanitation District – Virginia Initiative WWTP

4201 Powhatan Road, Norfolk, Virginia

Permit No. TRO-60350

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Hampton Roads Sanitation District – Virginia Initiative WWTP has applied for a Title V Operating Permit for its 4201 Powhatan Road, Norfolk, Virginia facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Permit Writer/Contact:

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Date: November 5, 2015

Regional Air Permits
Manager:

Troy D. Breathwaite

Date: November 5, 2015

Regional Director:

Maria R. Nold

Date: November 5, 2015

I. FACILITY INFORMATION

Permittee

Hampton Roads Sanitation District
PO Box 5911
Virginia Beach, Virginia 23471

Facility

Virginia Initiative WWTP
4201 Powhatan Road
Norfolk, Virginia 23508

County-Plant Identification Number: 51-710-00197

A. SOURCE DESCRIPTION

NAICS Code: 221320 – Sewage Treatment Facilities

NAICS Code: 562219 – Non-Hazardous Waste Treatment and Disposal

NAICS Code: 562213 – Solid Waste Combustors or Incinerators, Nonhazardous

The Hampton Roads Sanitation District (HRSD) is a political subdivision of the Commonwealth of Virginia and was established as a governmental instrument to provide for the public health and welfare by abating water pollution in the Hampton Roads area through the interception of wastewater outfalls and providing wastewater treatment plants. All of the HRSD treatment plants are interconnected for diverting wastewater flow to alternate treatment locations as the area's daily amount of generated wastewater flow varies along with the operational capabilities of each plant. The Virginia Initiative WWTP provides both primary and secondary municipal wastewater treatment for the Hampton Roads area, serving mainly Norfolk clients. The Virginia Initiative WWTP is rated to treat a design maximum average dry weather flow rate of 40 million gallon per day (mgd). The facility process units are grouped into four main functions: liquids management, solids handling, sludge incineration, and electrical generators.

Liquids management--Liquids management consists of all of the unit processes that treat the received wastewater prior to discharge to the Elizabeth River. These unit processes include the septic tank truck unloading station, headworks (influent screening and pumping)/grit removal chamber, aerobic, anaerobic, anoxic reactors, primary and secondary clarification, and disinfection contact basins. (might not make a difference basin or basins, we will have 2 basins. exist tank and new contact channel).

Solids handling--Solids Handling consist of unit processes that treat liquid treatment by-product streams before disposal. These streams consist of primary solids from Primary Solids day tank, primary scum concentrators, waste activated solids and sidestream solids from a local waste treatment facility. The solids are processed through pumps to a dewatering centrifuge then screws route dry solids to a belt that conveys solids to incinerator.

Sludge incineration--Sludge incinerator units are comprised of two identical multi-hearth incinerators used to dispose of dewatered solids from the solids handling sections. Each incinerator has 10 hearths, a dedicated induced-draft fan, and air pollution control equipment for particulate matter consisting of a pre-cooler, venturi scrubber, and an impingement (tray) scrubber. The incinerators can fire either natural gas or distillate oil as supplemental fuel in the combustion process.

Electrical generators--Three diesel engine electrical generator sets firing distillate oil. The electrical generators are used mainly for occurrences of normal power lost, but can also, upon request, be used for emergency demand response requirements.

The facility is a Title V major source of SO₂, CO and NO_x. This source is located in an attainment area for all pollutants. The facility is currently permitted under Minor NSR Permits issued on 02/13/1973 and 03/17/2014.

II. COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

III. EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

The emissions units at this facility consist of the following:

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity*	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled	Applicable Permit Date
Incinerators							
I-1/I-2	2	Multi hearth sludge incinerators (natural gas or distillate oil as backup), 1973	21 burners rated at 2.7 MMBTU/hr each per incinerator. 45 dry tons/day (sludge) per incinerator	Pre-cooler with Venturi scrubber followed by impingement (tray) scrubber (water only). ARCO Products Model No. VS-37-JS-2070, 1973. (Venturi replacement – TurboSonic, 2010.)	ISBR-1/ ISBR-2	PM/PM-10 (Odor)	02/13/1973 (State Only)
Liquids Management							
L-1	3a 3b	Liquids Management, 1943 Preliminary Treatment Facility, 2015	40 mgd (dry) (wastewater)	Two stage packed tower scrubber (water plus NaOCl & NaOH). Ershings, 1990. Two stage system, 8300 cfm (biological tower followed by NaOH & NaOCl scrubber). BioWay & Daniel Co., 2008.	LSBR-1/ LSBR-2	(Odor – H ₂ S)	N/A (State Only)
Solids Handling							
S-1	4a 4b	Solids Handling, 1976	40 mgd (dry)	Two stage packed tower scrubber (water plus NaOCl and NaOH) Ershings 1990.	N/A	(Odor – H ₂ S)	N/A (State Only)
Plant electrical generators							
G-1 G-2 G-3	1	Three (3) diesel-fired generators (Cummings – QSK78 Series Engines, Model DQLE, manufactured 2014.)	2,500 kW Each	N/A	N/A	N/A	03/17/2014
Gasoline Dispensing							
T-42		Gasoline UST	1,000 gallons	N/A	N/A	N/A	N/A

*The Size/Rated capacity is provided for informational purposes only, and is not an applicable requirement.

IV. EMISSIONS INVENTORY

A copy of the 2014 annual emission update is attached. Emissions are summarized in the following table.

2014 Criteria Pollutant Emission in Tons/Year					
Emission Unit	VOC	CO	SO ₂	PM ₁₀	NO _x
Incinerators	7.7	139.7	216.4	0.8	22.5
Liquids Management	11.8	0.0	0.0	0.0	0.0
Generators	0.1	0.4	0.04	0.04	2.1
Total	19.6	140.1	216.4	0.8	24.6

2014 Hazardous Air Pollutant Emissions in Tons/Year	
Pollutant	Tons/yr
Total HAPs	6.09

V. EMISSION UNIT APPLICABLE REQUIREMENTS – Incinerators (I-1 and I-2)

A. Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-80-110	Permit Content
9 VAC 5-50-80	Standards for Visible Emissions
9 VAC 5-60-70	Designation of Emission Standards (Mercury)
9 VAC 5-40-750	Standards for Particulate Matter (Incinerators)
9 VAC 5-40: Article 55	Emission Standards for Sewage Sludge Incineration Units

The following Federal Regulations that have specific emission requirements have been determined to be applicable:

40 CFR 61 Subpart E	NESHAP-Mercury
40 CFR 60 Subpart M	NSPS – Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units (as referenced by 9 VAC 5-40: Article 55)

See also NSR permit issued 02/13/1973.

The VA new source standards for opacity (9 VAC 5-50-80) were not promulgated until 08/09/75 – some two years after the 02/13/1973 permit was issued. The introduction to the new source standards (9 VAC 5-50-10) specify that the standards apply to all new source activity that has been conducted after March 17, 1972. The new source opacity standards, 20% with no more than one six-minute period not to exceed 30%, are the resultant values from the permit and Regulations that should be used for compliance.

The facility plans to comply with the Sewage Sludge Incinerator Unit requirements (9 VAC 5-40: Article 55) by way of annual stack tests and parametric monitoring.

The PM emission limit of 0.14 grains/dscf from the 1973 permit has been streamlined out of this permit. The 9 VAC Chapter 40, Article 55 PM limit of 80 mg/dscm, which is equivalent to 0.035 grains/dscf, coupled with the testing and monitoring requirements of Article 55, ensures that the 1973 permit limit cannot be exceeded.

B. Monitoring

The following Virginia Administrative Codes that have specific monitoring requirements have been determined to be applicable:

9 VAC 5-80-110 Permit Content
9 VAC 5-40: Article 55 Emission Standards for Sewage Sludge Incineration Units

The following Federal Regulations that have specific monitoring requirements have been determined to be applicable:

40 CFR 64 Compliance Assurance Monitoring
40 CFR 60 Subpart M NSPS – Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Units (as referenced by 9 VAC 5-40: Article 55)

See also NSR permit issued 02/13/1973.

C. Recordkeeping

The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include fuel supplier certifications, sludge or stack test results for mercury emissions, PM stack test results with PM emission factors used, PM CAM records, VEE records, operating procedures, maintenance records, operator training records, and daily (monthly average) dry ton biosolids feed rate to active incinerator(s).

D. Testing

The following Virginia Administrative Codes that have specific testing requirements have been determined to be applicable:

9 VAC 5-80-110 Permit Content

The following Federal Regulations that have specific testing requirements have been determined to be applicable:

40 CFR 61 Subpart E NESHAP-Mercury

Subpart E, Para 61.53(d) and 61.54, only requires an annual test for Hg (by means of an incinerator stack test performed using Method 101A of 40 CFR 61, Appendix B; or the sludge be tested for mercury levels using Method 105 of 40 CFR 61, Appendix B) if mercury emissions exceed 1,600 grams per 24-hour period.

The source conducted Hg testing during first title V permit cycle (June 2000) and used Method 29 for 40 CFR 503 stack emissions compliance and emissions were 17 grams/day (near 1/200 of standard). During the second permit cycle, the source tested biosolids fed to the hearth furnaces using SW-846 Method 7471A. Hg emissions were determined using equivalent equations to those listed in 40 CFR 61.54. Results from those tests are as follows:

Year	Hg Emission Rate (gram/day)
2010	8
2011	8
2012	6

The source is required to test the sludge for Hg under 40 CFR 503 every 60 days. Since all Hg past test results have been very low and with the 40 CFR 503 requirement of a continuing Hg sludge test requirement of every 60 days, **no** additional 40 CFR 61, Subpart E Hg compliance testing was required for this title V cycle permit.

Recently, the facility began preliminary stack testing to demonstrate compliance with the requirements of 9 VAC 5-40: Article 55 (Emission Standards for Sewage Sludge Incineration Units) which incorporates 40 CFR 60 Subpart MMMM. According to 9 VAC 5-40-8280, sewage sludge incineration units shall achieve final compliance no later than March 16, 2016.

Previous TV permits have required stack testing for PM on an incinerator when it exceeds 45-dry tons/day feed rate. The second incinerator would be tested if results were above 0.11 grains/dscf. This was all in an effort to ensure compliance with the 1973 permitted emission limit of 0.14 grains/dscf for PM. With the 9 VAC Chapter 40, Article 55 applicability and a PM emission limit of 80 mg/dscm (0.035 grains/dscf), it is not likely that the 1973 permit limit would ever be exceeded. Article 55 requires annual stack testing, which can become less frequent with results that meet the requirements of 40 CFR 60.5204(a)(3). Any change in the process requires a new performance test, as per 40 CFR 60.5205(a)(2).

See also NSR permit issued 02/13/1973.

E. Reporting

The permit includes reporting requirements for protocols, testing dates and results of stack tests conducted for PM or mercury and notifications for proposed plant changes that would potentially increase mercury emissions above 1,600 grams/24-hour period.

VI. EMISSION UNIT APPLICABLE REQUIREMENTS - Electrical Generators (G-1, G-2, and G-3)

A. Limitations

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

9 VAC 5-80-110	Permit Content
9 VAC 5-50-260	Standards for Stationary Sources

See also NSR permit issued 03/17/2014.

B. Monitoring

The following Virginia Administrative Codes that have specific monitoring requirements have been determined to be applicable:

9 VAC 5-80-110	Permit Content
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See also NSR permit issued 03/17/2014.

C. Recordkeeping

The following Virginia Administrative Codes that have specific recordkeeping requirements have been determined to be applicable:

9 VAC 5-80-110	Permit Content
9 VAC 5-50-50	Notification, Records and Reporting

See also NSR permit issued 03/17/2014.

D. Testing

The following Virginia Administrative Codes that have specific testing requirements have been determined to be applicable:

9 VAC 5-80-110	Permit Content
9 VAC 5-50-30	Performance Testing

See also NSR permit issued 03/17/2014.

E. NSPS Subpart IIII

The following Virginia Administrative Codes that have specific testing requirements have been determined to be applicable:

9 VAC 5-80-110	Permit Content
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The following Federal Regulations that have specific testing requirements have been determined to be applicable:
40 CFR 60 Subpart IIII NSPS – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Permit condition 50h states that, should operation of the units no longer qualify as emergency (as defined in 40 CFR Subpart IIII), the facility must then meet all requirements of non-emergency engines.

F. MACT Subpart ZZZZ

The following Virginia Administrative Codes that have specific testing requirements have been determined to be applicable:

9 VAC 5-80-110	Permit Content
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The following Federal Regulations that have specific testing requirements have been determined to be applicable:
40 CFR 63 Subpart ZZZZ MACT – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

- Condition 4.i: Section IX of the Title V permit lists State-Only Enforcement issues. Odor is not only an issue for the incinerators but the entire facility (liquids management, solids handling, etc.). The source is complying with Article 5-2 for BACT on odor control for the incinerators by using the scrubber system to control PM on the incinerators. The CAM requirements for monitoring the incinerator scrubber system is a way to also monitor odor control for the incinerators. If PM emissions are minimized, odor is expected to be minimized.
- Condition 4.iii: The 9 VAC Chapter 40, Article 55 PM limit of 80 mg/dscm (equivalent to 0.35 grains/dscf) ensures that the 1973 permit limit of 0.14 grains/dscf cannot be exceeded.

The following requirements from 9 VAC 5-40: Article 55 (Emission Standards for Sewage Sludge Incineration Units) have been streamlined into the Title V permit:

- 9 VAC 5-40-8230 Standard for Visible Emissions – states the provisions of Article 1 (9 VAC 5-40-60 et. Seq.) apply. Article 1 has visible emission limits of 20%/60%. The Title V permit currently limits visible emissions to 20%/30%. The more stringent limitation will remain in the permit.
- 9 VAC 5-40-8240A Standard for Fugitive Dust/Emissions – 9 VAC 5-40-90 is covered by Title V General condition 76.
- 9 VAC 5-40-8250 Standard for Odor – already covered in State-Only Enforceable Section of Title V permit.
- 9 VAC 5-40-8260 Standard for Toxic Pollutants – already covered in State-Only Enforceable Section of Title V permit.

The following conditions in the minor NSR permit of March 17, 2014, have been streamlined into the Title V permit:

- Condition 2: Title V condition II.
- Condition 15: Initial notifications for construction and start-up are complete.
- Condition 17: Title V condition 89.
- Condition 18: Title V condition 79.
- Condition 19: Title V condition 77.
- Condition 20: Title V condition 67.
- Condition 21: Title V condition 67.
- Condition 23: Title V conditions 83 and 84.
- Condition 24: Title V condition 81.

XI. GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

1. Comments on General Conditions
 - a. Conditions 56-61. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.2-604 and §10.1-1185 of the *Code of Virginia*, and the “Department of Environmental Quality Agency Policy Statement No. 2-09”.

This general condition cite(s) the Article(s) that follow(s):

Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Source.

This general condition cites the sections that follow:

- 9 VAC 5-80-80. Application
- 9 VAC 5-80-140. Permit Shield
- 9 VAC 5-80-150. Action on Permit Applications

b. Condition 67. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

This general condition cites the sections that follow:

- 9 VAC 5-40-41. Emissions Monitoring Procedures for Existing Sources
- 9 VAC 5-40-50. Notification, Records and Reporting
- 9 VAC 5-50-50. Notification, Records and Reporting

c. Condition 71. Permit Modification

This general condition cites the sections that follow:

- 9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources
- 9 VAC 5-80-190. Changes to Permits
- 9 VAC 5-80-260. Enforcement
- 9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources
- 9 VAC 5-80-1605. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
- 9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

d. Conditions 85-88. Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Conditions 85-88 and General Condition 64. For further explanation see the comments on general condition 64.

This general condition cites the sections that follow:

- 9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction
- 9 VAC 5-80-110. Permit Content

e. Condition 92. Asbestos Requirements

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

This general condition contains a citation from the Code of Federal Regulations that follow:
40 CFR 61.145, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to demolition and renovation.

40 CFR 61.148, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to insulating materials.

40 CFR 61.150, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to waste disposal.

This general condition cites the regulatory sections that follow:

9 VAC 5-60-70. Designated Emissions Standards

9 VAC 5-80-110. Permit Content

XII. STATE ONLY APPLICABLE REQUIREMENTS

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

9 VAC 5-40-290	Existing Source Standards for Hydrogen Sulfide
9 VAC 5-60-220	Existing Source Standards for Toxics
9 VAC 5-40-140	Existing Source Standards for Odor
9 VAC 5-50-140	New Source Standards for Odor
9 VAC 5-60-320	New Source Standards for Toxics

XIII. FUTURE APPLICABLE REQUIREMENTS

There are no future applicable requirements at this time.

XIV. INAPPLICABLE REQUIREMENTS

40 CFR 61, Subpart C: NESHAP for Beryllium. Subpart C was intended for a facility that uses beryllium or generates beryllium wastes and then disposes of it. Any beryllium found in the sludge is insignificant and incidental to the main purpose of the sludge incinerators.

40 CFR 60, Subpart O: NSPS for Sewage Treatment Plants. Subpart O was effective June 11, 1973 for new or modified sludge incinerators. This plant began construction before this date per the 02/13/1973 permit.

40 CFR 63, Subpart VVV: MACT for New and Reconstructed Major HAPs POTWs. This source is not a major source for HAPs.

40 CFR 60, Subpart Kb: NSPS for Volatile Organic Liquid Storage Vessels. This source does not store a VOC liquid product that is subject to the NSPS.

XV. INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity 9 VAC 5-80-720 C)
ISU-CB-31	One (1) Emergency Generator	5-80-720 C.4	N/A	107 hp (80 kW)
ISU-CB-48	One (1) Portable Emergency Electrical Generator	5-80-720 C.1a	VOC	25,470 BTU/hr
ISU-T-49/50	Two (2) Distillate Oil ASTs (275 & 265 gallons)	5-80-720 B.2	VOC	N/A
ISU-T-33a/33b	Two (2) Distillate Oil ASTs 20,000 gallons each (installed after 1984)	5-80-720 B.2	VOC	N/A
ISU-T-32a/32b/32c/32d	Four (4) Distillate Oil ASTs 20,000 gallons each (installed prior to 1984)	5-80-720 B.2	VOC	N/A
ISU-CB-31	One (1) Emergency Generator	5-80-720 C.4	N/A	107 hp (80 kW)

¹The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

XVI. CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

XVII. PUBLIC PARTICIPATION

The proposed permit will be placed on public notice in The Virginian-Pilot from **Sunday, September 20, 2015** to **Tuesday, October 20, 2015**.

Draft and proposed permit sent to affected state (NC) on **Friday, October 2, 2015**.

Draft and proposed permit sent to EPA on **Thursday, September 17, 2015**.