

ALLEGHENY COUNTY HEALTH DEPARTMENT AIR QUALITY PROGRAM

March 8, 2013

SUBJECT: Pennsylvania-American Water Company
Hays Mine High Service Pump Station
414 Becks Run Road
Baldwin, PA 15227
Allegheny County

Operating Permit No. 0831

TO: Sandra L. Etzel
Chief Engineer

FROM: Melissa Jativa
Air Quality Engineer

FACILITY DESCRIPTION

Hays Mine High Service Pump Station is a pump station which pumps potable water to Pennsylvania-American Water Company (PAWC) distribution system. The facility operates and maintains two 3,705 hp emergency generators. The generators are each limited to 500 hours per 12-month period and are used only for emergency conditions and routine maintenance testing. The generators only burn low sulfur diesel fuel with a sulfur content of 0.0015%_w or less.

This facility is a synthetic minor source of nitrogen oxides (NO_x) and a minor source of particulate matter (PM), particulate matter <10 µm in diameter (PM₁₀), particulate matter <2.5 µm in diameter (PM_{2.5}), sulfur dioxide (SO₂), carbon monoxide (CO), and volatile organic compounds (VOCs) as defined in §2101.20 of Article XXI.

PERMIT APPLICATION COMPONENTS:

1. Installation Permit Application No. 0831-I001, dated March 24, 2011 (application was for both the installation and operating permit).

EMISSION SOURCES:

Generators

I.D.	Source Description	Manufacturer / Model #	Maximum Capacity	Primary Fuel	Control	Stack I.D.
B001	Emergency Generator 1	Cummins Inc. QSK78-G10 NR1	3,705 hp	No. 2 Fuel Oil	turbocharged/ aftercooled; ultra-low sulfur diesel	S001
B002	Emergency Generator 2	Cummins Inc. QSK78-G10 NR1	3,705 hp	No. 2 Fuel Oil	turbocharged/ aftercooled; ultra-low sulfur diesel	S001

METHOD OF DEMONSTRATING COMPLIANCE:

Compliance with the emission standards set in this permit will be demonstrated by maintaining records of generator operation and fuel use as well as supplier certification of sulfur content. See Operating Permit No. 0831 for the specific conditions for determining compliance with the applicable requirements.

REGULATORY APPLICABILITY:

1. Article XXI Requirements for Issuance:

See Permit Application No. 0831-I001, Section 5: Applicable Requirements. The requirements of Article XXI, Parts B and C for the issuance of minor modification installation permits have been met for this facility. Article XXI, Part D, Part E & Part H will have the necessary sections addressed individually.

§2103.12.a.2.B (Standards for Issuance): Existing sources, where no limits have been established under Article XXI, are subject to Reasonably Available Control Technology (RACT) requirements. In this case, RACT will be consistent with the BACT determination performed at the time of IP 0831-I001 issuance.

a. The Department has determined that RACT/BACT shall be:

a. The use of ultra low sulfur fuel oil with 15 ppm sulfur content.

2. Testing Requirements:

Testing is not required. However, the Department reserves the right to require additional testing if necessary in the future to assure compliance with the terms and conditions of Operating Permit No. 0831.

3. New Source Performance Standards (NSPS):

The facility is subject to 40 CFR Part 60, Subpart IIII – *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines* for the two emergency generators. The generators will commence construction after July 11, 2005, after the applicability date of the NSPS and were manufactured after April 1, 2006.

4. NESHAP and MACT Standards:

This facility is subject to 40 CFR Part 63, Subpart ZZZZ – *National Emissions Standards for Stationary Reciprocating Internal Combustion Engines*. However, per §63.6595(c), the generator meets the requirements of this subpart by meeting the requirements of 40 CFR Part 60, Subpart IIII, and no further requirements of Part 63, Subpart ZZZZ apply.

5. Risk Management Plan; CAA Section 112(r):

No materials stored at the facility meet the threshold for CAA §112(r). Therefore, the facility is not subject to CAA §112(r).

EMISSIONS CALCULATIONS:

Emergency Generator

Generator Rating:	3,705 hp (maximum, at full standby)
Fuel Use (100%):	176 gal/hr
Fuel Oil Rating:	140,000 Btu/gal
No. of Generators:	2 (two)
Fuel Oil Sulfur Limit:	0.0015%
Operation:	500 hrs/yr

Emissions are based on data supplied by the manufacturer (see permit application #0831-I001). Because particulate matter and sulfur oxide emissions based on manufacturer information are less than the limits in

Article XXI, §2104.02(a)(1)(B) and §2104.03(a)(2)(A), the Article XXI limits have been streamlined into the manufacturer's limits. All PM is assumed to be PM₁₀; all PM₁₀ is assumed to be PM_{2.5}.

Article XXI: $0.28 \text{ lb}_{\text{PM}}/\text{MMBtu} \times 176 \text{ gal/hr} \times 140,000 \text{ Btu/gal} \div 10^6 \text{ Btu/MMBtu} = 6.90 \text{ lb}_{\text{PM}}/\text{hr}$
 $1.0 \text{ lb}_{\text{SOx}}/\text{MMBtu} \times 176 \text{ gal/hr} \times 140,000 \text{ Btu/gal} \div 10^6 \text{ Btu/MMBtu} = 24.64 \text{ lb}_{\text{SOx}}/\text{hr}$

Emission limits were based on BACT (§2102.04(b)(6)), which in this case are the numbers supplied by the manufacturer. The maximum emission for each pollutant was used. Maximum for PM and CO were at 1/4 standby; maximum for SO_x and NO_x were at full standby; and maximum for VOC was at 3/4 standby. These numbers meet the Tier 2 standards of 40 CFR §89.112.

The emission limits for the emergency generators are as follows:

Emergency Generator Emission Limits

Pollutant	Short-Term (per generator) (lb/hr)	Long-Term (per generator) (tons/year)	Long-Term (total) (tons/year)
Particulate Matter	1.62	0.41	0.82
PM ₁₀	1.62	0.41	0.82
PM _{2.5}	1.62	0.41	0.82
Nitrogen Oxides	46.41	11.60	23.20
Sulfur Oxides	0.81	0.20	0.40
Carbon Monoxide	1.77	0.44	0.88
Volatile Organic Compounds	1.23	0.32	0.64

RECOMMENDATION:

All applicable Federal, State, and County regulations have been addressed in the permit application and the facility was found to be in compliance. The operating permit for the PAWC Hays Mine High Service Pump Station at 414 Becks Run Road should be approved with the emission limitations and terms & conditions in Operating Permit No. 0831.