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**west virginia department of environmental protection**

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Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
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**ENGINEERING EVALUATION / FACT SHEET**

**BACKGROUND INFORMATION**

Application No.: G65-C559 (Class I Emergency Generator)  
Plant ID No.: 083-00136  
Applicant: Huttonsville Public Service District - Water Treat (HPSD)  
Facility Name: Elkwater Fork Water Treatment Plant  
Location: 9877 Seneca Trail, Mill Creek, WV 26280  
Mailing Address: P.O. Box 277, Mill Creek, WV 26280  
NAICS Code: 221310 - Water Supply and Irrigation Systems  
Application Type: Class I General Permit Registration  
(No newspaper advertisement)  
Received Date: January 8, 2016  
Assigned Date: January 11, 2016  
Engineer Assigned: John Legg  
Fee Amount: \$250.00  
Date Fee Received: February 11, 2016  
Complete Date: February 11, 2016  
Due Date: March 26, 2016  
UTM's: Easting: 581.88 km Northing: 4,272.97 km Zone: 17S  
Description: Installation of an 1,006 bhp (750 kW), diesel-fueled emergency generator set (Caterpillar DM9071) located at the Elkwater Fork Water Treatment Plant in Huttonsville, Randolph County, WV. Note that this Class I General Permit required no public notice.

**BACKGROUND INFORMATION**

This general permit application was prompted by permit determination PD15-074 submitted to the DAQ on August 24, 2015 and the resulting permit-needed-letter issued by DAQ's Tracy Rothwell on August 27, 2015.

On January 8, 2016, Huttonsville Public Service District - Water Treat (HPSD) submitted application G65-C559 for the construction of a #2 fuel oil-fired Caterpillar (1006 bhp) emergency generator set (DM9071). HPSD's application fee (\$250.00) was received on February 11, 2016. The new emergency generator was constructed (by the manufacturer) and installed in 2014 at the Elkwater Fork Water Treatment Plant, 9877 Seneca Trail, Mill Creek, WV 256280.

## PROCESS DESCRIPTION

The emergency generator will be operated in the event of a power failure or during maintenance/testing of the generator. Under the G65-C general registration, the generator/engine will be allowed to operation a maximum of 500 hours per year.

**Table 1: Information on Emergency Generator Set/Engine (EG-1) Installed at Huttonsville Public Service District-Water Treat located at the Elkwater Fork Waste Treatment Plant, Randolph County, WV.**

Emergency Generator Engine EG-1	
Fuel/Emission Strategy	EPA Certified for Stationary Emergency Application (EPA Tier 2 emissions levels)
Source ID No.	EG-1
Generator Manufacturer	Caterpillar
Generator Model	DM9071
Engine Manufacturer	Caterpillar
Engine Model	CAT C27 ATAAC
Engine Manufactured Date	2014
Manufacturer's Rated bhp/rpm	1006*/1800 (* based on 750kW)
Installation Date	2014
Is this a Certified Stationary Compression Ignition Engine according to 40 CFR 60 Subpart IIII?	Yes
Engine Type	LB4S (Lean Burn 4 Stroke)
APCD Type	Not Applicable
Fuel Type	#2 Fuel Oil
H <sub>2</sub> S (gr/100 scf)	0
Operating Hours	≤ 500 hr/yr
BSFC (Btu/bhp-hr)	7,438
Heat Input	7.5 MM Btu/hr 100% load (139,600 Btu/gal #2 fuel oil)
Fuel Consumption	53.6 gal/hr 100% load 42.9 gal/hr 75% load 30.7 gal/hr 50% load
	26,800 gal/yr 100% load

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Huttonsville, Randolph County, WV

**Table 1: Information on Emergency Generator Set/Engine (EG-1) Installed at Huttonsville Public Service District-Water Treat located at the Elkwater Fork Waste Treatment Plant, Randolph County, WV.**

Emergency Generator Engine EG-1	
EPA Certificate Number	ECPXL27.0NZS-005
EPA Engine Family	ECPXL27.0NZS

## **SITE INSPECTION**

The facility's location is available to DAQ Enforcement who may or may not choose to inspect the facility in the future. According to the application (General Permit Registration Section, entry 14A, page 2 of 5) the site is located as follows:

Go 8.3 miles south from US250 on US219 intersection in Huttonsville, WV. Turn Right onto County Route (CR) 58. Go 1.5 miles. Plant on left.

## **ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER**

Emissions were calculated by the writer and are summarized below in Table 2.

<b>Table 2: Emissions from HPSD's Emergency Generator Engine Set Installed at the Elkwater Fork Water Treatment Plant located in Randolph County, WV.</b>				
<b>Pollutant</b>	<b>Emission Factors<sup>(1)</sup></b>		<b>(lb/hr)<sup>(2)</sup></b>	<b>(ton/500 hr)</b>
Nitrogen Oxides (NO <sub>x</sub> )	5.25	(g/hp-hr)	11.64	2.91
Carbon Monoxide (CO)	0.25	(g/hp-hr)	0.55	0.14
Volatile Organic Compounds (VOC)	0.03	(g/hp-hr)	0.07	0.02
PM	0.021	(g/hp-hr)	0.05	0.01
(1) Emission factors for NO <sub>x</sub> , CO, VOC (as HC), and PM provided by engine manufacturer.				
(2) lb/hr = g/(hp-hr) x lb/(453.59 g) x 1006 hp = 2.22 x g/(hp-hr) x hp/g.				

## **GENERAL PERMIT ELIGIBILITY**

The construction and operation of the engine/generator set meets the applicability requirements as specified in the Class I General Permit G65-C (Section 2.3.1) issued May

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21, 2009. Therefore the facility is subject to Sections 1, 2, 3, and 4 (of the Class I General Permit G65-C) and this is stated at the top of page 2 in the general permit registration for G65-C559.

The generator engine is considered to be a reciprocating Internal Combustion Engines (R.I.C.E.), i.e., Section 5 of the Class I General Permit (G65-C) applies and this box is checked at the top of the general permit registration for G65-C559.

The generator is fueled by #2 fuel oil. No fuel storage tank information was submitted in the application. It was assumed that the generator had a small ( $\approx 1,000$  gallon) sub-base fuel tank. Because the assumed fuel storage tank is small, Section 6 (Tanks) of the Class I General Permit (G65-C) does not apply and the box is not checked as the top of the general permit registration for G65-C559.

The generator engine is subject to 40 CFR 60 Subpart IIII because the engine is a compression ignition engine burning #2 fuel oil, i.e., Section 7 of the Class I General Permit (G65-C) does apply and the box is checked at the top of page 2 in the general permit registration for G65-C554.

The generator engine is not subject to 40 CFR 60 Subpart JJJJ because the engine is not a spark ignition engine, i.e., the indicator box for Section 8 (40CFR60 Subpart JJJJ) is not checked in the general registration G65-C554.

## **TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS**

Formaldehyde is emitted at very low levels from the combustion of natural gas:

Formaldehyde, a colorless, pungent-smelling gas, can cause watery eyes, burning sensations in the eyes and throat, nausea, and difficulty in breathing in some humans exposed at elevated levels (above 0.1 parts per million). High concentrations may trigger attacks in people with asthma. There is evidence that some people can develop a sensitivity to formaldehyde. It has also been shown to cause cancer in animals and may cause cancer in humans. Health effects include eye, nose, and throat irritation; wheezing and coughing; fatigue; skin rash; severe allergic reactions. May cause cancer. May also cause other effects listed under "organic gases."

Benzene, ethylbenzene, and toluene are also emitted at very low levels from the combustion of natural gas.

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**RECOMMENDATION TO DIRECTOR**

HPSD's request for a permit for the installation and operation of a 1,006 HP emergency generator at their Elkwater Fork Water Treatment Plant meets the requirements of General Permit G65-C and all applicable rules, and therefore should be granted said General Permit Registration G65-C559.

  
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John Legg, Permit Writer

March 15, 2016      *3/15/16*  
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Date

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