west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone 304/926-0475

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

GENERAL PERMIT REGISTRATION APPLICATION ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Registration No.:	G65-C547
Plant ID No.:	049-00185
Applicant:	Greater Marion Public Service District
Location:	Carolina, WV (Marion County)
SIC Code:	4952
Application Type:	Construction
Received Date:	January 07, 2015
Engineer Assigned:	Thornton E. Martin Jr.
Fee Amount:	$250.00
Date Received:	January 12, 2015
Complete Date:	February 26, 2015
Applicant Ad Date:	NA
Newspaper:	NA
UTM's:	Easting: 562.20 km Northing: 4,370.08 km Zone: 17
Description:	Installation of an emergency generator used during power outages.

TYPE OF PROCESS

The following process description was taken from General Permit Registration Application G65-C547:

The Greater Marion Public Service District's (GMPSD's) sewer collection system utilizes two sewer pump stations to transfer sewage throughout the collection system and eventually to the Town of Worthington's Waste Water Treatment Plant for treatment and discharge into the West Fork River.

The Idamay sewer pump station is located between Rt. 218 and Idamay Camp Road in the town of Idamay. It collects gravity sewer flow from Idamay and transfers it to the Town of Carolina for further transfer. Approximately 217 customers are served by the pump station for a design pump flow of 130 GPM @ 370" Total Dynamic Head. The sewer pumps are of the wet-well mounted vacuum-prime type capable of handling up to 3" diameter solids. The pump station consists of two pump pairs of two pumps each, with each pair of pumps operating in series and pumping into dedicated force mains to the discharge point located in the Town of Carolina. The pumps utilize 3-phase, 480 Volt electrical power to operate the 4 - 50 Horsepower pump motors.

The Carolina sewer pump station is located along the southwest side of Main Street in the town of Carolina. It collects gravity sewer flow from Carolina in addition to all the sewer flow from the Idamay pump station and then transfers it to the Town of Worthington's Waste Water Treatment Plant for treatment. Approximately 189 customers in Carolina and 217 customers in Idamay (406 sewer customers total) are served by the pump station for a design pump flow of 250 GPM @ 100' Total Dynamic Head. The sewer pumps are of the submersible non-clog type capable of passing up to 3" diameter solids. The pumps utilize 3-phase, 480 Volt electrical power to operate the 25 Horsepower pump motors.

During normal operating conditions, 3-phase electrical power is supplied to the pump stations via Mon Power's public grid. The three phases are provided via pole mounted transformers on the power company's nearest service pole. Electrical power travels from the transformers to an electric service disconnect switch, then to an outdoor C.T. cabinet and electric meter mounted on the exterior of the pump station building, main circuit breaker, automatic transfer switch, main breaker panel inside the building and finally to the pump station control panel that controls when to send power to the pump(s) for operation.

During the event of an electrical power outage from the power company's grid, the automatic transfer switch detects the loss of voltage and transfers the pump station over to run off of emergency generator power supply. The transfer switch automatically disconnects the pump station from the public power grid and starts the emergency generator, providing emergency electric power to the entire pump station during the power outage. Once the power outage is resolved and electric power is restored to the pump station via the power company, the automatic transfer switch transfers power supply back to the public grid and shuts down the emergency generator and the pump station is restored to normal operating conditions.

The emergency generator is also configured to "exercise" itself at given intervals determined by the owner (typically once per week). This is part of an operation & maintenance regimen to help keep the generator in good operating condition.

All emission units covered by this permit are listed in Table 1:

Table 1: Emission Units

Source ID No.	Description	Engine							Control Equipment
		Manufacturer	Model	Mfg. Date	kW_E Rating	Speed	Tier	EPA Certificate	
Emergency Generator									
EG-1	Kohler Power Generator	John Deere	4024HF285B	2013	60	1800 RPM	Tier III	DJDXL04.5141-003	N/A
Storage									
		Status	**Content**	**Volume**	**Dia**	**Throughput**	**Orientation**	**Liquid Height**	
T-01	Fuel Tank	New	#2 Diesel	113 gal.	N/A	211 gpy	HORZ	2.0 ft.	N/A

SITE INSPECTION

A site inspection was deemed unnecessary by the writer at this time. However, once the emergency generator is installed and operated, it will be placed on the regular inspection list of sources.

Directions (taken from Application): Take I-79 North to WV Exit 132. Take the exit and turn left onto State Rt. 250 (Fairmont Ave.). Turn left onto Nasa Blvd., turn right on Industrial Park Rd., turn left onto Manley Chapel Rd., turn right onto County Rt. 27, turn left onto US 19, turn right onto State Rt. 218, turn left onto Carolina Rd. (Co. Rt. 52), Pump Station is located on the left just past Welcome to Carolina sign.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Maximum controlled emissions from GMPSDs' Carolina, diesel fired emergency generator are summarized in the table below. G65-C limits the facility to 500 hours per year of operation. The applicant submitted emissions based on 60 hours of use annually. The following annual emissions estimate were derived based on 500 hours of use as allowed by the G65-C permit.

Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
Nitrogen Oxides	0.56	0.14
Carbon Monoxide	0.08	0.02
Volatile Organic Compounds	0.03	0.008
Particulate Matter	0.03	0.008

GENERAL PERMIT ELIGIBILITY

The proposed construction and operation of this facility meets the eligibility (Section 2.3), and limitations and emissions controls (Section 4.1) as specified in the General Permit G65-C.

The engine is subject to 40CFR60 Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines because it was manufactured after April 1, 2006, as required by Section 60.4200(a)(2)(i). The engine is a 2007 or later engine and is not a fire pump engine. Section 60.4205(b) requires these engines to comply with the standards in Section 60.4202 that apply to the same model year and maximum engine power. For engines above 50 hp and below 3000 hp, have a displacement less than 10 liters per cylinder, not a fire pump engine, the requirement is to comply with the certification standards in 40CFR89.112 and 40CFR89.113 for all pollutants.

For this engine with a rated power of 60 kW (greater than 37 kW and less than 75 kW), the standards in 40CFR89.112 Table 1 are:

- NMHC+NOx: 4.7 g/kw-hr
- CO: 5.0 g/kw-hr
- PM: 0.40 g/kw-hr

Converting these values to allowable hourly emissions, results in the following:

- NMHC+NOx: 0.62 lb/hr
- CO: 0.66 lb/hr

- PM: 0.05 lb/hr

GMPSDs' engine meets these requirements.

Section 89.113 states that the exhaust opacity must not exceed:

- 20 percent during acceleration
- 15 percent during lugging
- 50 percent during peaks in acceleration or lugging modes

The engine is EPA certified to meet Tier III emissions standards (Certificate # DJDXL04.5141-003).

Section 60.4209(a) requires a non-resettable hour meter. This requirement is already in the General Permit G65-C conditions.

For 2007 model year and later engines, Section 60.4211(c) requires that the owner/operator purchase an engine certified to the emissions standard in Section 60.4205(b), and install and configure the engine according to the manufacturer's specifications. Compliance with requirement of purchasing a certified engine is expected since the authority to construct is only issued to the engine being evaluated and the engine meets the emissions standard in Section 60.4205(b) as discussed above.

RECOMMENDATION TO DIRECTOR

Greater Marion Public Service Districts' request to construct and operate an emergency generator at the Carolina, Marion County, WV site meets the requirements of General Permit G65-C and all applicable rules and therefore should be granted a General Permit Registration to construct and operate the said facility.

Thornton E. Martin Jr.
Permit Engineer

February 26, 2015
Date