

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: On-site Inspection

B797763073

FACILITY: ZEELAND BOARD OF PUBLIC WORKS		SRN / ID: B7977
LOCATION: 347 E. Washington Ave., ZEELAND		DISTRICT: Grand Rapids
CITY: ZEELAND		COUNTY: OTTAWA
CONTACT: Robert Mulder , Power Supply Manager		ACTIVITY DATE: 05/10/2022
STAFF: Kaitlyn DeVries	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: The purpose of this inspection was to determine compliance with MI-ROP-B7977-2022 and all other applicable air quality rules and regulations.		
RESOLVED COMPLAINTS:		

On Tuesday May 10, 2022, Department of Environment, Great Lakes, and Energy (EGLE) Air Quality Division (AQD) Staff Kaitlyn DeVries (KD) conducted a scheduled inspection of Zeeland Board of Public Works located at 347 E. Washington Avenue, Zeeland Michigan. The purpose of this inspection was to determine compliance with MI-ROP-B7977-2022 and all other applicable air quality rules and regulations.

KD arrived in the vicinity of the plant shortly before 9:30 am. Prior to entering, KD observed the area for any excess emissions or odors; none were noted. KD checked in at the main office building located at 350 E. Washington, where she soon met with Mr. Robert Mulder, Power Supply & Market Operations Manager who accompanied her on the inspection of the facility and provided her with the associated records.

### Facility Description

Zeeland Board of Public Works (ZBPW) is a municipally owned and operated electric generating station consisting of seven (7) dual fuel engines. All of the engines have the capability to burn both diesel fuel and natural gas and are primarily used for peaking. Low sulfur diesel fuel is used for ignition of the internal combustion engines, and then they switch over to natural gas. The total capacity for the seven (7) units combined is approximately 24,000 kW. All of the engines utilize catalytic oxidation to control emissions.

### Regulatory Analysis

ZBPW is currently operating under Title V permit MI-ROP-B7977-2022 and is a major source of Nitrogen Oxides (NOx). The engines at the facility are also subject to the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR Part 63 Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines, as an area source for Hazardous Air Pollutants (HAPs).

### Compliance Evaluation

#### *EU-ENGINE011*

Engine 11, installed in 1981, is a 6 MW (8300 HP) engine and is the newest of the engines located at the facility. None of the engines were operating at the time of the inspection. ZBPW is properly tracking the hours the engine ran as well as the inlet and outlet temperature and the pressure drop across the catalyst.

This engine has a sulfur dioxide (SO<sub>2</sub>) limit of 0.59 lb/MMbtu heat input, when firing diesel fuel. Compliance with this limit is demonstrated via the use of ultra-low sulfur fuel, with a sulfur content that does not exceed 50 ppm (0.005%). Records of the most recent fuel received, from March 2022, had a sulfur content of 15 ppm, maximum.

When this engine fires diesel fuel, NO<sub>x</sub> emissions are limited to 11.76 grams/kilowatt hour and 23.6 grams /kilowatt hour. Compliance with the NO<sub>x</sub> emission limits are demonstrated through testing, if the hours of operation for the engine exceeds 500 hours per 12-month rolling time period. Testing is not required at this time.

Engine 11 has energy production limitations based upon the fuel type that is combusted in the engine. ZBPW tracks the fuel used in the engine, as well as the energy produced. This engine is limited to 1,008 megawatt hours (MWH) per 12-month rolling time period for diesel fuel, and 18,637 MWH per 12-month rolling time period for combined natural gas and diesel fuel. For the period of May 2021 through April 2022 the 12-month rolling energy production for Engine 11 was 152.21 MWH. The engine has a 500-hour operating limit per 12-month rolling time period. The Engine operated for a total of 30.3 hours from May 2021 through April 2022. ZBPW most recently conducted USEPA Method 9 visible emission observations on September 29, 2020, indicating a 6-minute average opacity of approximately 5%. A method 9 reading is required at least once per 100 hours of unit operation.

Maintenance reports for Engine 11 were obtained and indicate that regular maintenance is conducted on the unit, and the maintenance is done in accordance with the Continuous Parameter Monitoring System (CPMS) that the facility maintains. The AQD received an updated CPMS plan with the ROP renewal.

KD observed the stack from the exterior of the facility and the stack exhausts unobstructed vertically upwards, but KD did not explicitly measure the dimensions.

#### *FG-ENGINES001*

This flexible group covers six (6) dual fuel internal combustion engines. These engines are EU-ENGINE001, EU-ENGINE002, EU-ENGINE007, EU-ENGINE008, EU-ENGINE009, and EU-ENGINE010. Each of these engines are equipped with an oxidizing catalyst and are subject to the provisions of 40 CFR Part 63 Subpart ZZZZ; the requirements of this subpart are evaluated in FG-RICEMACT. The engines vary in size ranging from 1600 hp to 7760 hp. The units were installed between 1966 and 1975 with EU-ENGINE001 being the oldest, and EU-ENGINE010 being the newest, of the engines in this flexible group.

These engines have a sulfur dioxide (SO<sub>2</sub>) limit of 1.11 lb/MMbtu, when firing diesel fuel. Compliance with this limit is demonstrated via the use of ultra-low sulfur fuel, with a sulfur content that does not exceed 1.0 % by weight, based on a heat value of 18,000 BTU per pound of diesel fuel. Records of the most recent fuel received, from March 2022, had a sulfur content of 15 ppm, maximum.

ZBPW tracks the amount of natural gas and diesel fuel combusted in each engine, the hours of operation, and the amount of energy produced by each engine. Of these six (6) engines, Engine 10 has produced the most energy during the period of May 2021 through April 2022, producing 180.658 MWH of energy; Engine 8 produced the least energy, producing 9 MWH. During the period of May 2021 through April 2022, EU-ENGINE001 operated for a total of 10.3 hours, EU-ENGINE002 operated for a total of 23.3 hours, EU-ENGINE007 operated for a total of 7.3 hours, EU-ENGINE008 operated for a total of 6.4 hours, EU-ENGINE009 operated for a total of 25.9 hours, and EU-ENGINE010 operated for a total of 36.4 hours.

EU-ENGINE009 and EUENGINE010 require USEPA Method 9 Visible Emissions readings at least every 100 hours of operation. ZBPW most recently conducted Method 9 readings on June 20, 2021, for EU-ENGINE009 and on June 27, 2021 for EU-ENGINE010, both indicating a 6-minute average opacity of 5%.

ZBPW has implemented and maintains a Continuous Parameter Monitoring System plan (CPMS), having most recently submitted a version with the ROP renewal.

KD observed the stacks from the exterior of the facility and the stacks exhaust unobstructed vertically upwards, but KD did not explicitly measure the dimensions. The stack for engine 7 was moved after a small fire in the building. Mr. Mulder explained that the integrity of the stack itself was inspected, remained intact, and it was moved outside, still exhausting unobstructed vertically upwards with the same dimensions as it was before; additional ductwork was added to move the stack outside, similar to the other stacks. Mr. Mulder went on to say that their consultant had evaluated the move of the stack and considered the move to be exempt from rule 201 permitting pursuant to Rule 285(2)(a).

#### *FG-RICEMACT*

These engines have a Carbon Monoxide (CO) limit of 23 ppmvd at 15% O<sub>2</sub> or 70% reduction or more. Compliance with this limit is demonstrated via stack testing. ZBPW most recently conducted stack testing in August 2018. The Stack test results indicated a reduction of 77% or greater for CO for all of the engines. The facility monitors and records the pressure across the catalyst and the temperature of the exhaust for each of the engines per Table 2b of 40 CFR 63.6603. ZBPW tracks the hours of operation for each of the engines as well, with each of the engines operating between a range of 6.4 and 36.4 hours for the time period of May 2021 through April 2022, as mentioned above.

KD observed the stacks from the exterior of the facility and the stacks exhaust unobstructed vertically upwards, but KD did not explicitly measure the dimensions.

Additionally, ZBPW has successfully been submitting the required compliance notifications for 40 CFR Part 63 Subpart ZZZZ.

#### *FG-COLDCLEANERS*

Currently, ZPBW only has one (1) cold cleaner. ZBPW uses a citrus-based solvent in the unit. The unit is not heated or agitated. The unit is exempt from Rule 201 permitting pursuant to Rule 281(2)(h).

*Miscellaneous*

Also located on site, are two (2) 10,000-gallon diesel fuel storage tanks. These tanks are exempt from Rule 201 permitting pursuant to Rule 284(2)(d). ZBPW also has a 1.4 MMBTU natural gas fired water heater, which is also exempt from Rule 201 permitting pursuant to Rule 282(2)(b)(i).

The 2021 MAERS report was reviewed as a part of this Full Compliance Evaluation, and the emissions reported in the MAERS Report are consistent with the operating parameters reported during the inspection. Additionally, all compliance reports have been received.

**Compliance Determination**

Based upon the observations made during the inspection and a subsequent review of the records, Zeeland Board of Public Works is in compliance with MI-ROP-B7977-2022 and other applicable air quality regulations.

NAME Kaitlyn Doherty

DATE 5/31/2022

SUPERVISOR [Signature]