

M4840

MANILA

DEPARTMENT OF ENVIRONMENTAL QUALITY  
AIR QUALITY DIVISION  
ACTIVITY REPORT: Scheduled Inspection

M484040744

FACILITY: Detroit Water & Sewerage, Joy Road Pump Station		SRN / ID: M4840
LOCATION: 43127 Joy Rd, CANTON TWP		DISTRICT: Detroit
CITY: CANTON TWP		COUNTY: WAYNE
CONTACT:		ACTIVITY DATE: 07/14/2017
STAFF: Stephen Weis	COMPLIANCE STATUS: Non Compliance	SOURCE CLASS: Synthetic Minor
SUBJECT: Compliance inspection of the Great Lakes Water Authority Joy Road Pump Station in Canton Township. The Joy Road Pump Station is scheduled for inspection in FY 2017.		
RESOLVED COMPLAINTS:		

**Location:**

Great Lakes Water Authority (formerly Detroit Water and Sewerage Department)  
Joy Road Pump Station (SRN M4840)  
43127 Joy Road  
Canton Township

**Date of Activity:**

Friday, July 14, 2017

**Personnel Present:**

Steve Weis, DEQ-AQD Detroit Office  
Nabil Kamash, GLWA

**Purpose of Activity**

A self-initiated inspection of the Great Lakes Water Authority (GLWA) Joy Road Pump Station (hereinafter "Joy Pump Station" or "Joy facility") was conducted on Friday, July 14, 2017. The Joy Pump Station is on my list of sources targeted for an inspection during FY 2017. The purpose of this inspection was to determine compliance of operations at the Joy facility with applicable rules, regulations and standards as promulgated by Public Act 451 of 1994 (NREPA, Part 55 Air Pollution Control), applicable Federal standards, and any applicable permits and orders.

**Facility Description**

The Joy Pump Station is located on the south side of Joy Road, about 1/10<sup>th</sup> of a mile east of Morton Taylor Road (which is designated as Main Street north of Joy Road) in Canton Township. The area around the Joy facility is a mix of residential, commercial and institutional properties. The property directly to the east of the Joy facility's property line belongs to the Calvary Baptist Church and the Plymouth Christian Academy. The property located directly west of the facility's property line contains a strip mall-type commercial development. There are residential properties located throughout the area, the closest located directly across Joy Road to the north of the facility in the City of Plymouth. According to information included with the facility's initial AQD Permit to Install (PTI) application submittal, the Joy facility property extends approximately 1,312 feet south of Joy Road, and is 343 feet wide (this equates to just over 10 acres).

The Joy Pump Station operates as part of the Great Lakes Water Authority's drinking water distribution system. The system was formerly owned and operated by the Detroit Water and Sewerage Department (DWSD), but GLWA began a 40 year lease with the City of Detroit that provided for GLWA's operation of the regional water and sewerage system on January 1, 2016. GLWA operates five water treatment facilities that treat freshwater that is drawn from Lake Huron, Lake St. Clair and the Detroit River, and deliver the treated water to the drinking water customers of GLWA. There are currently nearly 4 million customers in 126 southeast Michigan communities that receive drinking water from GLWA. The drinking water is transported from the treatment facilities via a distribution system that consists of a network of water mains (larger transmission mains operated by GLWA, and distribution and water mains maintained by the various municipalities), fire hydrants, pressure reducing valves (on the distribution mains) and reservoirs and booster stations operated by GLWA that ensure that proper water flow and pressure are maintained in the water mains. The Joy Pump Station is one of

the booster facilities in the drinking water distribution system.

The Joy facility consists of two drinking water storage reservoirs, each with a storage capacity of 5 million gallons; a pump building that contains six pumps; two diesel-fired emergency engines; and two 4,000 gallon capacity above ground storage tanks that store diesel fuel for use in the emergency engines. Some of the pumps in the pump building serve to pump water that is piped to the Joy facility via transmission lines from the Springwells Water Treatment Plant in Dearborn (SRN M4838) for storage in the on-site reservoirs (reservoir, or "R" pumps), while the other pumps (line, or "L" pumps) serve to supply the transmission lines with water from the reservoirs to maintain the flow and pressure of drinking water in the water mains.

The two diesel-fired engines at the Joy facility were installed in August of 1999 to provide emergency back-up power to the pumps in case of a power outage. This allows the Joy facility to operate when needed to maintain the water pressure in the water mains. The two engines are both Caterpillar Model 3516B generators rated at 1,825 kW electrical output, with a maximum heat input rate of 18.31 MMBTU per hour.

The water reservoirs, pump building, and engines are all located in the northern half of the property.

### **Facility Operating Schedule**

The Joy Pump Station is available for use on a 24 hour per day basis every day of the year. The facility is not regularly staffed. GLWA staff visit and check the site regularly, and perform maintenance/readiness checks of the engines once per month.

### **Inspection Narrative**

I arrived at the facility at 1:02pm. Nabil and I entered the facility, and parked in the lot between the pump building and the engines. There were contractors on site performing some electrical work at the facility. Nabil explained the layout of the facility, and we visited the generators. As I have done at other, similar GLWA facilities, I looked at the nameplate information affixed to the engines, which indicated that the engines are Caterpillar 3516B, model A269490000, and have a rated output of 1,825 kW. Nabil and I went into the control room for the generators. An operational log is kept in the control room through which GLWA staff who operate and maintain the equipment at the facility keep monthly records of the engine start-ups, as well as the hours of operation and the amount of fuel used each month. The fuel usage and hours of operation information that is kept on site at the facility does not directly match the format required in the PTI for the engines, as there is no running 12 month total of the hours and fuel usage. I was told that this information is provided to a contact at GLWA where it is compiled and maintained in the required format. I was told that the point of contact for this information is Steve Kuplicki of GLWA.

Nabil and I then looked at the diesel storage tanks. According to the information on the label affixed at one end of the tanks, the tanks have a storage capacity of 4,000 gallons, and they were installed in August of 1999. According to Nabil, this date should also correspond to the date that the engines were installed at the facility.

We left the facility at 1:28pm.

### **Permits/Regulations/Orders/**

#### **Permits**

The facility currently has one active air permit, PTI No. 255-99B. The original permit, PTI No. 255-99, was applied for in June 1999 by DWSD to address the pending installation of the two Caterpillar engines. The application material states that the engines were being installed "...to provide power to the water pumping station in the event of a power outage in January 2000 or at any time thereafter." The PTI limited the hours of operation of the engines to 500 hours per year to limit the potential emissions from the engines to below major thresholds (the permit also limited emissions of NOx to 12 tons per year). The permit was issued in August of 1999.

PTI No. 255-99A was issued to allow an increase in the hours of operation of the engines from 500 hours per year to 2,550 total combined operating hours per year. DWSD applied for this permit revision in May of 2002 to increase the allowed hours of operation of the engines so that the engines could be operated for electrical load peak shaving in addition to their use in providing emergency back-up power to the pumps. This PTI also increased the allowable NOx emissions to 39.4 tons per year. PTI No. 255-99A was issued in August of 2002.

The current PTI, No. 255-99B, was issued on December 1, 2008. DWSD applied for this permit to change the permitting operating limit on the engines from an hours of operation basis to a fuel restriction basis. DWSD requested this change on the basis that the hours of operation limit from the past versions of the permit were based on 100 percent load during the operation of the engines. DWSD provided that the engines are frequently operated at reduced loads, but that any operation was essentially being regulated, from an emissions standpoint, as being at 100 percent load. The fuel usage restriction was calculated based on the NO<sub>x</sub> limit of 39.4 tons per year. Thus, the current permit still serves to limit the potential emissions from the engines to below major source thresholds.

The compliance status of the Joy Pump Station facility with the requirements of PTI No. 255-99B is summarized, as follows:

Special Condition I.1 (Emission Limits) – This condition limits the total emissions of nitrogen oxides (NO<sub>x</sub>) from the operation of the two engines to 39.95 tons per year. As of the finalizing of this report, GLWA has not provided me with valid information demonstrating how NO<sub>x</sub> emissions are being calculated and tracked by GLWA. Based on the low usage of these generators (typically an hour or less per generator, per month), the NO<sub>x</sub> emissions should be well below the permitted limit. The application materials that were submitted for PTI No. 255-99A provide a Caterpillar guaranteed NO<sub>x</sub> emission rate of 30.9 pounds per hour, based on 100% load. The two engines would need to operate for 2,585 hours during a 12-month time period to meet the permit limit. Based on the operational logs that I looked at, the engines look to be in compliance with this emission limit.

Special Condition II.1 (Material Limits) – The facility is **in compliance** with this condition. All of the fuel that is used at GLWA facilities is ultra low sulfur diesel, and has a sulfur content of less than 0.05% by weight.

Special Condition II.2 – As of the finalizing of this report, GLWA has not produced any records to demonstrate that diesel fuel usage is no more than 328,333 gallons per 12 month rolling period. The engines have a maximum fuel consumption rate of 130.8 gallons per hour, per engine. Given the number of hours that the engines are being used, the diesel fuel usage should be well below 328,333 gallons per 12 month rolling time period. It is assumed that the facility is complying with the requirement.

Special Condition IV.1 (Design/Equipment Parameters) – There is no device associated with the engines to monitor the fuel usage. Rather, the fuel usage is monitored based on the flow of fuel to each engines' day tank. Compliance.

Special Condition VI.1 (Monitoring/Recordkeeping) – As of the finalizing of this report, GLWA has not demonstrated that the monthly calculations of the NO<sub>x</sub> emissions from the engines are being performed and recorded. Non-compliance.

Special Condition VI.2 – GLWA maintains fuel specifications for each delivery of fuel at GLWA facilities. Compliance.

Special Condition VI.3 – As of the finalizing of this report, GLWA has not demonstrated that the monthly and 12 month rolling time period records of diesel fuel usage is being maintained. Non-compliance.

Special Conditions VIII.1 and 2 – These conditions put forth the ambient exhaust parameters for the two engines. This information was provided in the PTI applications. The stack parameters were not evaluated during this site visit.

#### Federal regulations

The engines were installed in 1999, and have not been modified since they were installed. The installation date for these engines is prior to the dates that make up the applicability criteria associated with 40 CFR Part 60, Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines), as put forth in 60.4200(a). Thus, the two engines at the Joy Pump Station are not subject to Subpart IIII.

The requirements of 40 CFR Part 63, Subpart ZZZZ (National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines) apply to owners and/or operators of stationary reciprocating internal combustion engines (RICE) at both major and area (or minor) sources of hazardous air pollutant (HAP) emissions, except if the RICE is being tested at a test cell/stand. The Joy facility is a minor source of HAP emissions, as the potential to emit HAPs is less than 10 tons of any single HAP, and less than 25 tons for combined HAP emissions. Engines that meet the definition of "Emergency Stationary RICE" in Subpart ZZZZ are not subject to the provisions and requirements of this Subpart. In order to be considered an

emergency RICE, the operation of the engines must meet the requirements put forth in 40 CFR 63.6640(f). If the operation of an engine does not comply with the requirements in 63.6640(f), then the engine is not considered to be an emergency stationary RICE for the purposes of this Subpart, and the engine is subject to the requirements of Subpart ZZZZ. Among the criteria for an engine to be classified as an emergency stationary RICE is the requirement put forth in 63.6640(f)(4) that while an engine can operate for up to 50 hours per year in non-emergency situations, after May 3, 2014, the 50 hours per year cannot be used for peak shaving or non-emergency demand response. The hours of operation of the engines is quite low, but if any of the operating hours at the Joy facility occurred for purposes of peak shaving, then the engines could conceivably be subject to the requirements of Subpart ZZZZ.

### **Compliance Determination**

Based upon the results of the July 14, 2017 site visit and subsequent records review, the Joy Road Pump Station facility is not in compliance with all of the applicable requirements of Permit to Install 255-99B.

Attachments to this report: a diagram that shows the sequence of the drinking water supply system.

NAME Steve Jones DATE 9/28/17 SUPERVISOR JK