

M4839

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

M483940741

FACILITY: Detroit Water & Sewerage, Wick Pump Station		SRN / ID: M4839
LOCATION: 32280 Wick Road, ROMULUS		DISTRICT: Detroit
CITY: ROMULUS		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 Wick Pump Station in Romulus. The Wick Pump Station is scheduled for inspection in FY 2017.		
RESOLVED COMPLAINTS:		

Location:

Great Lakes Water Authority (formerly Detroit Water and Sewerage Department)
Wick Pump Station (SRN M4839)
32280 Wick Road
Romulus

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) Wick Pump Station (hereinafter "Wick Pump Station" or "Wick facility") was conducted on Friday, July 14, 2017. The Wick 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 Wick 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 Wick Pump Station occupies a roughly 5 acre parcel that is located on the north side of Wick Road between Wickham and Vining Roads. Much of the area around the Wick facility is open land. The parcels of land to the north, west and east of the facility are currently being used as farm land. The area on the south side of Wick Road is currently vacant land. Interstate 94 is located about 275 yards to the south of south of Wick Road, and the Detroit Wayne County Metropolitan Airport property is located south of the interstate. There is a Comfort Inn hotel property located approximately 300 yards to the east of the Wick facility. The nearest permanent residence is located approximately one mile to the southwest of the facility.

The Wick 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 Wick Pump Station is one of the booster facilities in the drinking water distribution system.

The Wick facility consists of one drinking water storage reservoir with a storage capacity of 10 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 Wick facility 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 Wick facility were installed in July of 1999 to provide emergency back-up power to the pumps in case of a power outage. This allows the Wick 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 reservoir takes up most of the northern 2/3 of the property, while the pump building and the engines are located on the southern portion of the property close to Wick Road.

Facility Operating Schedule

The Wick 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

Nabil and I arrived at the Comfort Inn parking lot at 2:00pm. Wick Road was closed for road construction from the driveway of the Comfort Inn west to Vining Road, so Nabil and I left our vehicles in the hotel parking lot and walked to the Wick Pump Station, which is roughly ¼ mile west of the hotel. Nabil and I entered the facility, and we walked around the pump building. Nabil explained that there are six pumps at the Wick facility, some of which serve to pump water to the reservoir, while the others are line pumps that pump water from the reservoir to the drinking water main. We then looked at the two engines. 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, 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. The last entry in the log book was from May of 2017, and showed an hour meter reading of 538 hours for generator No. 1, and 537 hours for generator No. 2.

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 July of 1999. According to Nabil, this date should also correspond to the date that the engines were installed at the facility. I observed the reservoir, which at this facility is located within a grassy berm.

We left the facility at 2:25pm and walked back to our vehicles at the Comfort Inn.

Permits/Regulations/Orders/

Permits

The facility currently has one active air permit, PTI No. 253-99B. The original permit, PTI No. 253-99, was applied for in June 1999 by DWSD to address the pending installation of the two Caterpillar engines. 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 July of 1999.

PTI No. 253-99A 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 September of

2002.

The current PTI, No. 253-99B, 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_x 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 Wick Pump Station facility with the requirements of PTI No. 253-99B is summarized, as follows:

Special Condition I.1 (Emission Limits)– This condition limits the total emissions of nitrogen oxides (NO_x) 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_x 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_x emissions should be well below the permitted limit. The application materials that were submitted for PTI No. 253-99A provide a Caterpillar guaranteed NO_x 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_x 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 Wick facility 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 Wick 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 Wick 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 Wick Pump Station facility is not in compliance with all of the applicable requirements of Permit to Install 253-99B.

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

NAME Steve Wilson

DATE 9/28/17

SUPERVISOR JK