

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

K539240745

FACILITY: Detroit Water & Sewerage, Northeast Sewerage St.		SRN / ID: K5392
LOCATION: 11000 East Eight Mile Road, DETROIT		DISTRICT: Detroit
CITY: DETROIT		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 Northeast Sewerage Station and Northeast Water Plant facilities in Detroit. These facilities are scheduled for inspection in FY 2017.		
RESOLVED COMPLAINTS:		

Location:

Great Lakes Water Authority (formerly Detroit Water and Sewerage Department)
Northeast Water Treatment Plant and Northeast Wastewater Pumping Station (SRN K5392)
11000 East Eight Mile Road
Detroit

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) Northeast Water Treatment Plant and Northeast Wastewater Pumping Station facilities (hereinafter "Northeast Treatment", "Northeast Pump Station" or "Northeast facilities") was conducted on Friday, July 14, 2017. The Northeast facilities are 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 Northeast facilities 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 Northeast facilities are located on the south side of East Eight Mile Road just west of its intersection with Hoover Road. The facility property extends for ½ mile south of Eight Mile, and has ¼ mile of frontage along Eight Mile. The area around the facility is a mix of land uses. To the east and southeast is a parcel that is currently occupied by an auto salvage yard, beyond which is a railroad right-of-way and some commercial and industrial properties along Groesbeck and Hoover. The area directly to the south currently contains the auto salvage yard and Canadian National Railroad Nolan Distribution Center. The area to the west consist of the former Fiat Chrysler Connor Avenue Assembly Plant and the Bel Air Shopping Center. The area to the north consists of commercial and light industrial properties with frontage along Eight Mile Road. There are residential areas in relatively close proximity to the facility. The closest residential properties are located about 200 yards to the southwest, and 150 yards on the north side of Eight Mile from the facility's property line.

The Northeast facilities consist of two separate operations – the Northeast Water Treatment Plant, and the Northeast Wastewater Pumping Station. These two operations are both under the control of the GLWA, and are considered as part of the same stationary source.

Northeast Water Treatment Plant

The Northeast Water Treatment Plant portion of the Northeast facilities 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 Northeast Treatment facility is one of the water treatment facilities in the drinking water distribution system.

According to GLWA's website, the Northeast Treatment facility has been in operation since 1956. The facility can produce up to 300 million gallons per day (MGD) of drinking water which is distributed to suburban communities in southern Macomb County, southeast Oakland County, and northeast Detroit

The Northeast Treatment facility consists of an administration/office building, a water filtration and treatment building, some below grade drinking water storage tanks (just behind the office building), and pump buildings. There are four diesel-fired engines that are located to the east of the filtration/treatment building. These engines were installed in 2006 to provide power to the pumps at the Northeast Treatment facility in case of a power outage. The four engines are Cummins Model QSK60-G6 generators rated at 2,000 kW electrical output, with a maximum heat input rate of 17.25 MMBTU per hour. There is an above-ground diesel storage tank that provides fuel for the four generators.

Northeast Wastewater Pumping Station

The Northeast Wastewater Pumping Station portion of the Northeast facilities operates as part of the Great Lakes Water Authority's sewerage 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. The Northeast Pump Station is a municipal pumping station that operates as part of the sewage lines serving the east and northern suburbs. The Oakland Macomb Interceptor Drain (OMID) sends the sewage to the Northeast Pump Station. Sewage that flows to the Northeast Pump Station is pumped to points downstream in the sewage system. There are 5 sanitary sewage pumps at the facility. The Northeast Pump Station infrastructure is located at the far southern end of the Northeast facilities property.

The Northeast Pump Station consists of a pump building and three diesel-fired engines. The three engines were installed in July of 1999 to provide emergency back-up power to the pumps in case of a power outage. The three engines are Caterpillar Model 3516B generators rated at 1,825 kW electrical output, with a maximum heat input rate of 18.31 MMBTU per hour. There are two above ground diesel storage tanks, each with a storage capacity of 6,000 gallons.

Facility Operating Schedule

The Northeast Treatment facility operates on a 24 hour per day basis every day of the year.

The Northeast 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 facility at 10:35am. We checked in at the office building, and we proceeded to the Northeast Pump Station. We looked at the three 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 operations information that is kept on site at the facility does not directly match the format required in the PTI for the engines, and 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. I wrote down the most recent entries in the log book, which showed an hour meter reading of 266 hours

for generator No. 1, 239 hours for generator No. 2, and 261 hours for generator No. 3.

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 6,000 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.

We walked over to the pump building. The Northeast Pump Station has been undergoing some infrastructure repair and replacement work relating to the pumps. The work involved removing the “covers” from the pumps, the covers being a concrete, ground level roof over the five pump shafts. The covers are located on the south side of the pump building. The DEQ-AQD Detroit Office has received some complaints over the past couple of years relating to odors; the odors were determined to be due to the migration of odor-laden air from the pump shafts venting to the ambient air due to the absence of the covers. At the time of my visit, four of the five permanent covers were in place. The remaining opening was on the middle pump, and it was covered with a temporary cover made of plastic sheeting. I detected a light odor with a sewage character when I stood close to the temporary cover. Nabil and I entered the pump building. He showed me a direct air industrial heater that is located in the building. It is a Rupp Air Management Systems unit, model CFA27. The label on the unit indicated that the maximum rated heat input capacity of the unit is 4,536,000 BTU per hour.

Nabil and I then went back to the facility office to speak with staff from the Northeast Treatment Plant about the remaining four engines. I met with two staff people, Sonny and Annie. They told me that the Treatment Plant can supply 300 million gallons of drinking water per day, and that in the event of a power outage, using the four emergency engines would allow the facility to continue to pump drinking water at a rate of up to 120 million gallons per day. They told me that the four engines are operated for about ½ hour per month for maintenance checks, during the third week of the month. I asked them if the facility kept logs of the hours of operation and fuel usage associated with the engines and the pump station and the treatment plant. They checked around the facility to see if they could find operating logs for the engines at the facility, or locate related records that I was looking for. They were able to provide me with a log of the readings from the hours meters on the four engines from April 26, 2017, but they were unable to find records for the remainder of the information. They communicated to me what I had heard at other, similar GLWA facilities – the records are compiled and kept at a central location by someone with GLWA. The hours readings that were provided to me are as follows – 115.4 hours for engine 1, 111 hours for engine 2, 114 hours for engine 3 and 114.9 hours for engine 4. It is assumed that the numbering is used by the Northeast Treatment Plant for their engines. I am unsure how the numbering aligns with the designations in the PTI for the remaining four engines (designated as EUENGINE4 through EUENGINE7).

We left the facility at 11:35am.

Permits/Regulations/Orders/

Permits

The facility currently has one active air permit, PTI No. 111-06. This permit was approved by DEQ-AQD on May 24, 2006, and served to consolidate the requirements for two PTIs – PTI No. 257-99A, which addressed the three engines at the Northeast Pump Station, and PTI No. 307-05, which addressed the four engines at the Northeast Treatment Facility.

As was the case for similar GLWA pump station facilities, the original permit for the Northeast Pump Station, PTI No. 257-99, was applied for in June 1999 by DWSD to address the pending installation of three 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 NO_x to 12 tons per year). The permit was issued in July of 1999. PTI No. 257-99A 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 NO_x emissions to 39.4 tons per year. PTI No. 257-99A was issued in August of 2002.

PTI No. 307-05 was a DEQ-AQD General Permit that was approved on November 8, 2005 to address the installation and operation of the four Cummins diesel-fired engines at the Northeast Treatment facility.

DWSD applied for PTI No 111-06 to consolidate the requirements for the seven engines that are operating at the same stationary source into one permit document. They also wanted to have the four engines at the Northeast Treatment facility covered under a PTI issued pursuant to Michigan Administrative Rule 201(1) instead of the General Permit. The compliance status of the Northeast facilities with the requirements of PTI No. 111-06 is summarized, as follows:

Special Condition 1.1 (Emission Limits) – This condition limits the total emissions of nitrogen oxides (NO_x) from the operation of the seven engines at the Northeast facilities to 80 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. 111-06 provide a Caterpillar guaranteed NO_x emission rate of 30.9 pounds per hour, based on 100% load, for the three engines at the Northeast Pump Station, and Cummins guaranteed NO_x emission rate of 41.43 pounds per hour, also based on 100% load, for the four engines at the Northeast Treatment facility. The four 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 1.2 (Material Usage 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 1.3 (Material Usage Limits) – As of the finalizing of this report, GLWA has not produced any records to demonstrate that diesel fuel usage is no more than 677,282 gallons per 12 month rolling period. The four Cummins engines have a maximum fuel consumption rate of 123.2 gallons per hour, per engine, and the three Caterpillar engines have a maximum fuel consumption rate of 130.8 gallons per hour. Given the number of hours that the engines are being used, the diesel fuel usage should be well below 677,282 gallons per 12 month rolling time period. It is assumed that the facility is complying with the requirement.

Special Condition 1.4 (Monitoring) – During my site visit, it was not demonstrated to me that GLWA is monitoring the diesel fuel usage rate. Non-compliance

Special Condition 1.5 (Recordkeeping/Reporting/Notification) – As of the finalizing of this report, GLWA has not produced any records to demonstrate that they are completing the calculations associated with this permit. Non-compliance.

Special Condition 1.6 – 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 1.7 – GLWA maintains fuel specifications for each delivery of fuel at GLWA facilities. Compliance.

Special Condition 1.8 - 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 1.9a through g – These conditions put forth the ambient exhaust parameters for the four engines. This information was provided in the PTI applications. The stack parameters were not evaluated during this site visit.

Federal regulations

The three engines at the Northeast Pump Station 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). Similarly, the model year and installation date of the four engines at the Northeast Treatment facility look to be prior to the dates put forth in 60.4200(a). Thus, the seven engines at the Northeast facilities do not appear to be 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 Northeast facilities are 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 Northeast facilities 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 Northeast Water Treatment Plant and Northeast Wastewater Pumping Station, which make up the Northeast facilities, are not in compliance with all of the applicable requirements of Permit to Install No. 111-06.

NAME

Steel WessDATE 10/30/17

SUPERVISOR

JK