

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

B159830221

FACILITY: FLINT WATER POLLUTION CONTROL FACILITY		SRN / ID: B1598
LOCATION: G-4652 BEECHER RD, FLINT		DISTRICT: Lansing
CITY: FLINT		COUNTY: GENESEE
CONTACT: Robert Case , Supervisor		ACTIVITY DATE: 07/14/2015
STAFF: Nathaniel Hude	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT:		
RESOLVED COMPLAINTS:		

Inspection Report

B1598- Flint Water Pollution Control Facility
G-4652 Beecher Road, Flint, Michigan

Inspection Date:

7/14/15

Facility Contacts:

Robert Case- Division Supervisor, 810-766-7210, rcase@cityofflint.com
John Florshinger- Incinerator Operator
Chad Antle- BioWorks Energy

MDEQ AQD Personnel:

Nathan Hude – 517-284-6779, HUDEN@michigan.gov

Facility Description:

Flint Water Pollution Control Facility is the treatment plant for all of the Flint residences. They have a capacity of 50 million gallons per day, yet the average is 22 million gallons per day. 4 incinerators are onsite used to burn sludge waste. The ash is mixed with the scrubber wash and sent to a lagoon on Linden Street. Around May 2011, they installed a bio digester with a flare through a Swedish Company, BioWorks Energy. The digester and flare is owned by the city. The site is now planning to install an engine to produce electricity. The engine was purchased by BioWorks, who will maintain ownership yet operate the engine on the Flint Water Pollution Control Facility property. Their plan is to have the engine up and running in October of 2015. At that time, the incinerators will be shut down and no-longer used. Post bio digester sludge will be sent to the landfill at that time. This plan will negate the plant from the need to comply with 40CFR60 MMMM which has requirements beginning March 2016.

Applicable Regulations:

1. MI-PTI-228-73A
2. 40CFR61 Subpart E
3. 40CFR60 MMMM

Previous Inspections:

5/11/2012, Brad Myott, violation due to scrubber differential pressure out of range
5/28/2009, Brad Myott, no violations

This Inspection Key Concerns:

1. Bio digester flare calculations need to be recorded and maintained by the site. With an estimated flow of fuel at 33,930 ft.³/hr and a H₂S content of 100ppm they are emitting 0.56 lbs/hr of SO₂. Based on the same flow, 180ppm of H₂S would place them over the 1.0 lbs/hr limit for exemption.
2. The biogas engine is subject to 40CFR60 JJJJ based on my interpretation and will require a onetime initial stack test followed by required maintenance practices and recordkeeping. Since the engine is not owned by the city, a new SRN may need to be established to separate BioWorks from Flint Water Pollution Control Facility. An email was sent on 7/15/15 informing both BioWorks and the Flint Water Pollution Control Facility of the situation.
3. Although the engine is exempt via 285(g), a 278 evaluation needs to be completed by the facility for calculation of actual emissions to ensure they are not greater than significant levels. An email detailing this was sent on 7/15/15.

Emission Unit Summary Table

Emission Unit ID	Emission Unit Description	Stack Identification
EU-INCINERATOR1	Six-Hearth sewage sludge incinerator controlled with a venturi and impingement tray scrubber and mist eliminators.	SV-INCINERATOR1
EU-INCINERATOR2	Same as EU-INCINERATOR1	SV-INCINERATOR2
EU-INCINERATOR3	Same as EU-INCINERATOR1	SV-INCINERATOR3
EU-INCINERATOR4	Same as EU-INCINERATOR1	SV-INCINERATOR4

Inspection Summary

I arrived onsite at 0930 for an unscheduled and unannounced inspection. This was also an initial contact as the facilities new Air Inspector. Upon approaching the facility, I did not notice any odors or visual environmental concerns. I observed the incinerator stack for some time and did not witness any visible emissions, just steam.

When entering the office, I was told that Robert Case was unavailable, yet John Florshinger would help me with the inspection. John and I sat down in a conference room where I provided him with a copy of the inspection brochure and we discussed the purpose of my inspection.

We then discussed the site. John informed me that the facility is capable of handling 50 million gallons of waste daily. Their normal load is 22-23 million gallons due to a decrease in industry and population within the city. Currently, they are only using EU-Incinerator2. EU-Incinerator4 has not been used since the spring of 2014; EU-Incinerator1 and EU-Incinerator3 have not been used for approx. 3 years and they have been cannibalizing parts to keep EU-Incinerator2 running. EU-Incinerator2 has been running 4 days/week, 24 hours/day. Due to new regulatory requirements (40CFR60 MMMM) that require action by March 2016, the city has decided to no longer use the incinerators and will shut them down in October of 2015. This was documented in a letter sent on March 19, 2014 to Vince Hellwig and cc'd to Brian Culham. The letter also discussed not submitting an application for an ROP (making them a title 5 source) per MMMM due to the planned shutdown of the incinerators. Robert provided me a copy of this letter later in the inspection which will be included in this report.

John stated that in place of the incinerators, they plan to continue use of the installed bio digester and add a generator. At this time John called Chad Antle. Chad came into the conference room where we discussed the engine and flare. Chad stated the flare average H₂S content of the gas was around 50ppm with a high of 100ppm and that they monitored the flare H₂S content on a weekly basis. He also stated that the fuel use was approx. 6000 ft³/hr (which differed from the copy of the "SO₂ Emission Rate Worksheet" received by email on 7/15/15 and B. Myott's worksheet completed during his 5/11/2012 inspection) and that they were under the 1lbs./hr. exemption limit. I asked if Chad had a copy of the technical data sheet (TDS) for the engine and he went to get one. The TDS was mostly in German, yet did have some English translation. The engine was imported from Germany, built in 2001, 6 cylinder spark ignition (SI), and it is capable of producing 50 Hz or 60 Hz based on engine rpm. For 50 Hz, the engine needs to operate at 1500 rpm which will produce 167 kW, an increased rpm is needed for 60 Hz. Based on the increased rpm to achieve 60 Hz, I am unsure if the kW output increases.

Chad had done some research on permitting with the help of Jim Ostrowski from OEA. Using the "Anaerobic Digesters Factsheet", Chad came to the conclusion that the generator was exempt based on R 336.1285(g) which gives exemption for ICE that have less than 10mmBtu/hr heat input. I confirmed this in the exemption booklet, but informed him I was concerned about the engines applicability of 40CFR60 JJJJ or 40CFR63 ZZZZ. I informed Chad that I would look into the regulations once returning to the office and let him know of my findings.

At this point, John and I started making our way out for the inspection and Robert arrived. John departed for a meeting and I continued with Robert. Robert informed me that Flint owned and operated the bio digester and the flare. Chad (BioWorks) has been hired as a contract employee for the city and BioWorks will own and operate the generator. In the future, more engines may be installed based on methane output of the digester. At the current rate, they are producing more methane than what the engine can burn, thus the need for the flare will still exist.

Robert and I went into his office and discussed the site some more. He stated that the planned operational date for the generator is October of 2015 and will coincide with the incinerator shut down. Any post digester sludge will then be dewatered in the current dewatering building and then shipped out to a landfill. A load out building was being constructed to facilitate this; this far it looked like the foundation and footings had been completed with some piping from the dewatering building.

At this point we went out for the inspection. Our first stop was the engine. The engine is housed in a conex transport container that can be placed on a semi or ship. Cement footings were installed to support the conex. Inside, I inspected the engine. I could not find a data plate for the serial number and specification information so Robert called Chad on his cell phone to ask where it was located on the engine. Chad informed Robert that he had taken it off, yet it was available for me to look at. I did find a serial number on the generator: 0143183/01. I could tell that work was still being done on the engine, yet it was hooked up with fuel.

Robert and I then went to the incinerator building. The incinerators are located in the same building as the dewatering machines. The one dewatering machine in use that day was having maintenance problems, so the incinerator sludge input had been stopped. We viewed the computer control screen. I recorded the following from the screen for EU-INCINERATOR2:

Exhaust O2: 16.1%

Sludge Feed Rate: 0

Hearth Temps: 1) 1051°F 2) 1043°F 3) 983°F 4) 1096°F 5) 313°F 6) 136°F

Exhaust temp between incinerator and scrubber: 1116°F

Scrubber Differential Pressure Drop: -12.6"wc

There was also a clipboard nearby to where the operator recorded specific hourly rates for some of the PTI requirements.

Robert and I toured the incinerator area where we looked at the incinerator, sludge feed system, and the scrubber. I confirmed the scrubber gauge DP to be around -12.5 and the water flow rate to be 450gpm. Robert told me that the ash from the incinerator was mixed with the scrubber effluent and piped to a lagoon on the other side of Linden Road.

We then went to the foreman's office for a records check. I found the documentation to be IAW permit requirements and Robert provided me with a copy of the June filter press and incineration data. Chad met up with us and brought the data plate for the engine to us. He stated that he had taken it off the engine because one of the corners was broken off. I informed him that the data plate is the only identifiable marker for the engine and it needs to be placed back on the engine. Robert made me a copy of the data plate.

Robert and I concluded the inspection discussing an overview of the inspection. I told him I did not find any violations but would investigate the applicability of 40CFR60 JJJJ and 40CFR63 ZZZZ to the engine. I also asked for an updated computation of the SO₂ Emission Rate Worksheet and a copy of the CO calculations for their TPY limit. He stated that he would work with Chad to complete the sheet and email me a copy.

I departed the site at approx. 1215 after finding no issues.

Upon returning to the office, I researched 40CFR60 JJJJ and 40CFR63 ZZZZ. I found that ZZZZ did not apply, yet JJJJ did. I informed Chad and Robert of my findings which will require initial testing followed by recordkeeping and maintenance practices. Testing will need to be completed very soon after the engine is up and running (60.4244 states "immediately upon startup"). Yet I did inform them that they may want to have an environmental consultant evaluate the engine for applicability. This information was provided in an email I sent on 7/15/15.

On 7/15/15, I also received an email from Robert with the SO₂ Emission Rate Worksheet attached but I did not review it until 7/16/15 due to the time of day it arrived after business hours. The calculations used listed 100ppm as the H₂S concentration of the gas and a calculated gas use of 33,930ft³/hr (using design capacity of the piping and cross section of the flare to compute) which calculated out to 0.56 lbs/hr of SO₂. I compared this to the sheet completed by Brad Myott during his 2012 inspection and found the H₂S to be recorded as 300ppm and the fuel flow to be recorded at 4,000ft³/hr. I emailed Robert back to ask why there was a difference in the calculations. My concern is that if the possibility of a gas concentration is 300ppm, with a fuel use rate of 33,930ft³/hr, this would equate to 1.68 lbs/hr of SO₂ which is well over the 1 lbs/hr limit for exemption. Based on a fuel use rate of 33,930ft³/hr, the maximum H₂S concentration to remain under the 1 lbs/hr SO₂ limit is 180ppm H₂S.

On 7/16/15, I received a copy of the sites CO emission and found they are well under the permit limit.

As of the writing of this report I have not received a response to my email regarding my concerns with the flare emissions or the engine.

NAME *[Signature]*

DATE 7/17/15

SUPERVISOR *B.M.*