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

B179241143

FACILITY: Warren Waste Water Treatment Plant		**SRN / ID:** B1792
LOCATION: 32360 Warkop, WARREN		**DISTRICT:** Southeast Michigan
CITY: WARREN		**COUNTY:** MACOMB
CONTACT: David M. Monette , Division Head		**ACTIVITY DATE:** 08/18/2017
STAFF: Sebastian Kallumkal	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MAJOR
SUBJECT: Onsite Inspection, records view		
RESOLVED COMPLAINTS:		

On Friday, August 18, 2017, I conducted a targeted inspection at the Warren Wastewater Treatment Plant located at 32360 Warkop Street, Warren, Michigan. The purpose of the inspection was to verify facility's compliance with requirements of Article II, Air Pollution Control, Part 55 of Act 451 of 1994 and the Renewable Operating Permit No. MI-ROP-B1792-2016.

I arrived at the facility at about 10:30 AM. The sky was overcast, 73.9°F, Wind = W @ 10 mph (8-18-2017; 10:25 AM WUNDERGROUND.com).

At the facility, I met Mr. Dave Monette, Division Head. I introduced myself and stated the purpose of the inspection. During the pre-inspection meeting, we discussed the operations at the facility. The incinerator was not operating from January 21, 2017 through May 9, 2017, due to an incinerator fire. During this time the sludge was hauled offsite to Landfill. He indicated that recently the incinerator and the control equipment had no malfunctions.

He also told me that the carbon in the activated carbon adsorption odor control unit for the belt press room exhaust was being replaced on that day. They monitor the H2S indicator to determine the carbon breakthrough. The carbon filter was first installed about 8 years ago. Previously, the belt press room exhaust was vented to the incinerator chemical scrubber.

Warren WWTP is currently subject to 40 CFR 60, Subpart MMMM-Emission Guidelines and Compliance Times for Existing Sewage Sludge Incineration Unit pursuant to the Michigan Administrative Rule R972. The compliance date was March 21, 2016. The facility installed a 3-stage VenturiPak Wet Scrubber (installed by EnviroCare) in order to comply with the emission limits. Facility did not operate the incinerator until the scrubber installation was complete which was after March 21, 2016, the compliance date. The facility conducted initial compliance test for NOx, CO, SO2, PM, HCl, Metals, and D/F during June 14-15, 2016. They established scrubber parameters (liquid flow rate, pressure differential, pH) and incinerator combustion temperature during the compliance test. The report was received on September 16, 2016. The report showed compliance with the emission limits. The Ash Handling Plan was submitted on April 29, 2016. The site-specific monitoring plan was received on June 9, 2016. The initial operator training was conducted on August 24 and 25, 2016. They have 12 operators. Each operator is given a hardcopy and electronic copy of the training materials for review. He told me the annual review course would be conducted the following month. .

The facility conducted annual compliance test for NOx, CO, SO2, PM, HCl, Metals, and D/F during July 13 and 14, 2017. They established scrubber parameters (flow rate, pressure differential, pH) and incinerator combustion temperature during the compliance test. AQD received the report on August 21, 2017.

He also informed me that they didn't have any air quality related process changes since last AQD inspection. They told me that the incinerator is used about 4-5 days per week with occasional weekends if the incinerator was under repair during week days.

After meeting with Mr. Monette, Mr. Dan Weir, Operator Technician, assisted me with record review in the control room. I also met Mr. Todd Schaedig, Facility Engineer and Mr. Brian Chlor, Electrician in the control room. The incinerator was running at the time of my inspection. Dan explained that the ash handling is a closed system. From the incinerator, the ash is mixed with scrubber water and the slurry is discharged to a nearby lagoon. When the ash is dried, it is scraped, loaded into truck and landfilled. He told me that the fugitive dust from this process is minimal.

He also explained the incinerator bypass (MD5 damper in the process flow chart) is always stay closed. The damper is attached to dead weights to keep it closed. Only time the damper is opened is during an incinerator fire or when the incinerator is worked on. He told me that the when the damper is opened, the incinerator shuts down due to the process safety control. The process flow diagram in the control room show the position of the damper. The damper will be opened automatically to save the incinerator if it is at very high temperature. They also have a camera which shows the position of the damper weights. If the damper is opened, visual and audio alarms would be made to alert the operators.

I discussed the permit conditions with Mr. Schaedig. He told me that all the meters are calibrated either by facility staff or outside vendors. He is keeping records of the calibrations. He provided me some of the copies of the records. Later, he emailed me electronic data (Incinerator temps, pH, sludge throughput, differential pressure, scrubber flow rate, calibration records, operator training data, etc.). All the electronic data is saved in the folder S://Air Quality Division/staff/Kallumkal/2017 Inspections/Warren WWTP.

The incinerator data at the time of inspection was:
Hearth 1=972°F; H2= 932°F; H3=802°F; H4=1418°F; H5=1532°F;
H6=1184°F; H7= 994°F; H8=933 °F H9=328°F; H10 =206°F

During the 2016 stack test the operating parameters established were:

Minimum dP = 24" WC; on the day of inspection: 25.7" WC
Minimum pH = 6.30; Today: 6.8
Minimum temperature (average temperature of the combustion zone (H5, H6, H7)) = 1225°F
Today (H4, H5, H6) = 1378°F
Scrubber Flow = 620.5 gpm; Today = 951 gpm

After the records review and discussions, Todd accompanied me for an inspection of the facility.

Initially, we went to the incinerator area. It was operating. I observed light yellow plume from the stack. The opacity did not appear to be more than 20%. I did not enter the incinerator room because I obtained the data from the control room.

I also observed that the staff was working on the carbon filter change for the carbon adsorption unit for the belt press room exhaust. Todd showed me the indicator for the carbon breakthrough monitoring. It was "black" colored at that time. The fresh indicator would be "purple". They will put new indicator after the carbon installation is complete.

The Grit Box carbon filter fan was turned on at 57°F. The pressure differential was at 12" WC. The pH indicator was purple color currently. (The indicator goes from purple to gray to black, as H2S absorption takes place). The blower fan was on at the time of the inspection.

Next, we visited the two RICE engines (EUGenerator and EUHouseGenerator). The EUGenerator, located inside a building, is an emergency engine (2.1 MW, installed in 1971)

manufactured by Electromotive Division of General Motors. The facility keeps records of fuel usage and operating hours. It was not operating at the time of my inspection.

The EUHouseGenerator, located outside, is a backup generator (60W, installed 2006) to power the EUGenerator battery. It was not operating at the time of the inspection.

Next, we visited the "wet well" scrubber. The pH=9.0. The scrubber water flow range: 0.75 to 1.25 gpm. The flow was at 0.84 gpm. Pressure differential range = 15 to 20 psi. The reading was at 15 psi. I did not observe any visible emissions from the scrubber stack.

Process:

This facility treats wastewater from domestic and industrial sources. This facility is not an industrial POTW. The wastewater is gravity fed from remote stations into the wet well at the plant. The bar screens in the wet well separates the heavy, large materials which are later landfilled. The exhaust from the wet well is vented through an odor control chemical scrubber. The wastewater from wet well is pumped to the grit chamber covered with precast concrete. The heavy particles are removed in the grit chamber using gravity settling. The separated materials are landfilled. Water then flows into primary settling tanks through the split box. The emissions from the grit chamber and splitting box are vented through an activated carbon adsorption odor control unit.

The sludge from the primary settling is removed and stored in storage tanks and later blended with activated sludge in the blending tanks.

The overflow from the settling tanks is mixed with returned activated sludge (RAS) and becomes mixed liquor. This treated water flows into (4) aeration tanks. The overflow from the aeration tanks is treated with ferric chloride, as needed and is stored in (8) settling tanks (final clarifiers). The overflow from the final clarifiers is passed through multi-media filters, chlorinated with sodium hypochlorite, and further disinfected with UV radiation. The treated water is discharged to the river.

Some of the waste activated sludge (WAS) from the final clarifier becomes return activated sludge (RAS) and is mixed with primary settling tank sludge.

The sludge from the primary setting tanks and some of the sludge from the final clarifiers go directly to the gravity belt thickeners (GBT). Prior to the GBT, cationic polymers are injected in to the sludge line to thicken the sludge. The dewatered sludge goes to the belt filter presses. The filter cake is incinerated. The ash is pumped along with scrubber water to lagoons. The dried ash is later hauled away and landfilled.

During the heavy raining days, instead of going to the primary tanks, overflow water from the wet well is stored in an underground retention basin. During the low water conditions, the collected water is processed through POTW. The basin-overflow is chlorinated using sodium hypochlorite, and de-chlorinated using sodium bisulfite, prior to discharging to the river.

The Renewable Operating Permit (MI-ROP-B1792-2016) has following emission units/flexible groups.

EUINCINERATOR- Contains requirements for the Multiple Hearth Incinerator effective before March 31, 2016-Compliance Date for 40 CFR 60, Subpart MMMM

EUINCINERATOR-NSPS-MMMM- Contains requirements for the Multiple Hearth Incinerator effective after March 31, 2016-Compliance Date for 40 CFR 60, Subpart MMMM

EUBELTPRESS-Three belt presses
EUWETWELL - Wet Well
EUGRITBOX- Grit Chamber and Split Box
EUGenerator- 2.1 MW emergency generator
EUHouseGenerator-60 KW Black Start engine
FGCOLDCLEANERS-EUCOLDCLEANERS and EUColdCleaner

EUINCINERATOR- The requirements for EUINCINERATOR are included in EUINCINERATOR-NSPS-MMMM which also includes requirements of 40 CFR 60, Subpart MMMM-NSPS Emission Guidelines for existing Sewage Sludge Incinerators effective after March 21, 2016 and R336.1972.

EUINCINERATOR-NSPS-MMMM

The incinerator has 10 hearths. The sludge is introduced into Hearth 2. The 1st, 3rd, 5th, 7th and 9th hearths have no burners. Hearths 4-7 are considered combustion zone (1250-1350°F) and Hearths 8-10 are considered cooling zone (300-1500F). The exhaust from the incinerator is vented through a VenturiPak wet scrubber which includes 3 stages: quencher stage, subcooling stage (impingement tray scrubber) and venture stage with a Venturi style wet scrubber followed by a mist eliminator to control particulate matter emissions. No chemicals are added to adjust the pH for odor control or HCl and SO2 control.

SC I. 2 and SC I. 3 limit the Hg (=3200 g/day) and Be (10 g/day) emissions from the sludge incineration. The facility calculates daily average cake feed based on monthly throughput and calculates daily Hg and Be emission rates. The calculated emission rate ranged from 3.2 through 51.9 day for Hg and 2.5 through 4.8 g/day for Be. (See attachment 1a and 1.b)

SC I.1 and I.4 through I.13 limits PM, HCl, CO, Dioxins/Furans, Hg, NOx, SO2, Cd, and Pb emissions. The stack tests conducted June 14-15, 2016 and July 13-14, 2017 show that the incinerator emissions are below the specified emission limits. (see attachments 2.a and 2.b)

The facility had conducted a stack to measure particulate matter emissions in July 17, 2007. The testing was conducted using the US EPA Reference Methods described in 40 CFR Part 60, Appendix A., Methods 1, 2, 3, 4 and 17. The test results show that the facility is in compliance with the 0.2 lb PM/1000lb exhaust air, corrected to 50% excess air (SC I.1).

The incinerator is equipped and operating with VenturiPak wet scrubber as required by SC III.1. The scrubber is operated at all times when the incinerator is operated. The wet scrubber is equipped with differential pressure monitoring device, as required by SC III.2. They informed me that the incinerator cannot be operated if the bypass is opened. (See discussion above on Page 2).

The facility chose annual stack test to show compliance with emission limits instead of installing continuous emission monitoring (CEM), as referenced in SC IV.1. The permittee has installed a monitor to record the sewage feed rate as required in SC IV.2. The monitor is calibrated annually. Facility provided records of calibration.

The scrubber is installed with devices to monitor and record combustion zone temperature, pressure drop across the scrubber, scrubber liquid flow rate, and pH, as required in SC IV.3, IV.4, IV.5 and IV.6. These monitors are calibrated and records are kept.

The permittee analyzes and calculate Hg and Be content and emission rates as specified in SC V.1 through 6. The permittee conducted stack tests to show compliance with the emission

limits in SC I.4 through 13 as specified in V.7 and 9. The permittee chose not to use CEMS, as referenced in SC V.8 and 10, to show compliance with the emission limits. Permittee established minimum combustion temperature, minimum pressure drop, minimum scrubber liquid flow rate, and scrubber liquid pH, as specified in the SC V.11.

The permittee is keeping records of mercury and beryllium content of sludge and ash and emission rates as required in SC VI. 1 and 2 (Attachment 4). The differential pressure monitor appears to be operating properly and calibrated annually. The PM is also a parameter tested during the annual compliance stack testing. Minimum pressure differential was established during the annual test. The pressure differential noted during the inspection was above the minimum differential pressure. The permittee appears to be conducting all the required monitoring required by the CAM plan. The facility has not had any PM excursion during the annual stack test. (SC VI. 3-8).

The permittee is monitoring and keeping records of sewage feed rate, moisture content (Attachment 8) of the sewage, combustion temperature, pressure drop across the scrubber, and liquid flow rate through each scrubber stage, on a continuous basis. Electronic records were provided for these parameters (SC 9-11, 13-14). Permittee had already submitted the site-specific monitoring plan (SC VI.12).

The facility has established a pH limit during the stack test and is monitoring and keeping continuous records of the scrubber liquid pH as in SC VI. 15 (40 CFR 60.5170(b), 40 CFR 0.5230).

EUBeltPress

The belt press room has three belt filter presses with attached gravity belt thickeners (GBT). The liquid sewage sludge from the liquid treatment process is mixed with cationic polymer and is fed into one of the gravity belt thickeners. The installation of GBTs is a process improvement which generates sludge with solid content up to 23% instead of previous 19%. The equipment is housed in an enclosed building. The air from this room is vented to a carbon adsorption unit to control the H_2S concentration for employee safety. There are seven intake vents for the carbon adsorption unit. Each intake vent is equipped with dust filters. At the time of the inspection the carbon in the system was being replaced.

The system is equipped with an H2S monitor and differential pressure monitor. The permittee is monitoring and keeping records of the differential pressure and maintains the carbon system, as required (Attached 3).

EUWetWell

This emission unit consists of the wet well, oxidative (chemical) scrubber odor control unit, and auxiliary equipment. The whole process is enclosed and the exhaust air is vented through the oxidative (chemical) scrubber odor control system. This odor control system consists of an oxidative scrubber, air compressors, and a chemical feed system equipped with an automatic pH monitoring and liquid flow control unit. The wet well has two in-line axial fans (20,000 cubic feet per minute) used to vent the wet well area.

At the time of our inspection the oxidative scrubber was running continuously. The scrubber is equipped with a liquid flow meter, chemical feed system and a pH meter.

The pH of the scrubber solution was at 9.0. Corrective actions (SC VI.3) are needed if the pH goes below 7.0. The hypochlorite flow rate is calculated from the percent speed and percent stroke of the hypochlorite pump. The facility monitors the chemical flow by adjusting the pump speed and stroke. At 100% Speed and 100% stroke the flow rate is 4.5 GPM.

The water flow rate was at 0.84 gpm at the time of inspection. The facility's established range was 0.75-1.25 gpm. However, the ROP (SC III.4) requires that the water flow rate be 2 gpm. On August 29, 2017, I discussed this issue with Dave Monette. This condition was added to the ROP during last renewal due to comments from USEPA to establish a scrubber water flow rate to show proper operation. 2 gpm flow rate was chosen as the minimum flow rate. However, the scrubber was historically operated between 0.75 -1.25 gpm. Mr. Monette informed me that the chemical scrubber was installed to control odor from wet well emissions and no odor complaints were received for many years. He also indicated that complying with 2 gpm limit would require rebuilding the entire system, but the current system is working properly. He indicated that he will request modification of this condition during next renewal. Even though facility is not in compliance with SC III.4, but the system working properly, this deviation is not considered a violation.

The records show that the water flow is within the facility's established range of 0.75-1.25 gpm. He informed me that the scrubber odor control system operates 24 hours a day and 7 days a week. The pump has a tendency to plug up due to caustic scale build up. Therefore, a secondary pump was installed. If the pump is clogged, the pH goes down and it will generate a visual alarm.

The facility keeps a daily log for the operating parameters and maintenance for the Wet Well Odor Control System. The facility is in compliance with Section III. (2) and (3) requirements which requires the facility to equip and maintain a liquid flow indicator, a chemical feed system and pH monitor system. Facility keeps records as required by Section VI (1), (2), (3), (4) and (5) for the chemical feed, pH, hours and days of scrubber operation, pH monitoring and recordkeeping, and liquid flow rate through the scrubber on a weekly basis. The scrubber is operated 24 hours per day and 7 days per week. During the inspection, there were no visible emissions from the scrubber stack. The reviewed records did not show incidences of pH below 7.0 (Attachment 6).

EUGritBox

From the wet well, the raw sewage flows (1ft/sec) to the grit chamber where large particles are removed using a mechanical separator. The split box and the grit chamber are enclosed. The exhaust from the grit chamber, split box and grit building are vented through a carbon adsorption unit prior to exhausting to the atmosphere. He told me that the carbon usage was at 25% using H_2S indicator. The indicator was purple at the time of inspection. As the carbon ages due to H_2S adsorption, the color will change from purple to gray to black at which the carbon will be replaced.

The facility is keeping records of the waste water temperature, carbon replacements, winter shut down and summer start up, etc.

While in operation, the carbon adsorption unit is checked weekly for the percent of saturation (25%, 50% and 75%). They told me they keep a log for this monitoring. (Attachment 6)

EUGENERATOR and EUHouseGenerator

EUGENERATOR (2.1 MW, 2855 HP, diesel fuel CI Emergency generator, installed 8/1/1971, located at a major source of HAP emissions) is subject to 40 CFR 63, Subpart ZZZZ. Compliance date for this emergency generator was June 15, 2007. For the EUGENERATOR, the facility is required to comply with the requirements of 40 CFR 63, Subpart ZZZZ-National Emission Standards for Hazardous Air Pollutants (NESHAP) for Reciprocating Internal Combustion Engines.

The facility is keeping records of the hours of operation, maintenance (oil changes and testing), etc. They provided me copies of the records. The facility appears to be in compliance with the applicable requirements.

EUHouseGenerator (60 KW, 82 Hp, diesel fired, engine, installed 10/23/2006, new, located at a major source of HAP emissions) is subject 40 CFR 60, Subpart IIII-Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. For the EUHouseGenerator the facility is required to comply with the requirements of 40 CFR 60, Subpart IIII.

A stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions is new if the construction of the stationary RICE was commenced on or after June 12, 2006 (40 CFR 63, Subpart ZZZZ).

40 CFR 63, Subpart ZZZZ (40 CFR 63.6590) states that an affected source that is a new or reconstructed stationary RICE, located at a major source of HAP emissions and is a compression ignition (CI) stationary RICE with a site rating of less than or equal to 500 brake HP, must meet the requirements of this subpart by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines. No further requirements apply for such engines under 40 CFR 63, Subpart ZZZZ. Pursuant to 40 CFR 60, 4200 the date that construction commences is the date the engine is ordered by the owner or operator.

They informed me that EUHOUSEGENERATOR is a certified engine and provided certificate from the manufacturer. The NOx emissions are below the emission limit. Mr. Schaedig also provided copies of the maintenance log, annual inspection and the diesel fuel shipment information which show sulfur content of the fuel. (Attachment 5a, 5b, 5c)

FGCOLDCLEANERS

This parts washer is serviced by Safety Kleen Corp. Its lid was kept closed and I found that an operating procedure was posted near it at the time of my inspection. The facility appears to be in compliance with the applicable requirements

Discussion:

During the post inspection meeting with Mr. Monette and Mr. Schaedig, Mr. Monette indicated that Warren WWTP would like to have flexibility in selecting the combustion zone hearths compared to the combustion zone hearths that were used during the compliance test. I informed them that based on the explanation from USEPA the minimum combustion temperature could be an average temperature of the combustion zone hearths. So, the combustion zone hearths are not fixed.

Mr. Monette also stated that they are not adjusting the pH of the scrubber liquid to control HCl or SO_2 emissions from the incinerator. He inquired whether the facility could measure the scrubber liquid pH during the stack test and monitor it continuously, but not consider the minimum pH as a parametric limit they need to comply with. They don't think they should be reporting a pH value lower than that was measured during the stack test as a deviation during annual ROP report certification because they are not adjusting the pH to control air pollutants. I recommended that they contact USEPA to get clarification on this requirement (I provided EPA contact information).

Relevant Conditions in the ROP:

EUINCINERATOR-NSPS-MMMM

SC IV.6 states that the permittee shall install, calibrate, maintain and operate in a satisfactory

manner, a device to monitor and record the liquid pH for the venturi scrubber on a continuous basis when pH is being adjusted to control emissions. (40 CFR 60.5200, 40 CFR 60.5170(b))

SC VI.15 states that the permittee shall monitor and record, on a continuous basis, the scrubber liquid pH for the venture scrubber when pH adjustment is utilized for treatment for EUIncinerator-NSPS-MMMM in operation. Measurements of the scrubber liquid pH for the venture scrubber shall be recorded every 15 minutes. The permittee shall keep all records on file at the facility and make them available to the Department upon request. (40 CFR60.5170(b), 40 CFR 60.5230)

Additionally, I suggested that they may want to apply for a new permit to install (PTI) to include the new control systems for the Belt Press room and the incinerator. In the previous PTIs, the Belt Press room exhaust and the incinerator exhaust were vented to a chemical scrubber. The incinerator emissions were also controlled by impingement type wet scrubber prior to exhausting to the chemical scrubber. Currently, the Belt Press Room exhaust is vented to an activated carbon adsorption unit and incinerator exhaust is vented to 3-stage VenturiPak wet scrubber. Mr. Monette agreed to consider the suggestion.

Conclusion: Based on the inspection and records review, the facility appears to be in compliance with the applicable air quality requirements.

NAME Scheerling Kallumkal DATE 8/31/2017 SUPERVISOR