

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B581658605

FACILITY: DELTA TOWNSHIP		SRN / ID: B5816
LOCATION: 7000 W WILLOW, LANSING		DISTRICT: Lansing
CITY: LANSING		COUNTY: EATON
CONTACT: Rick Kane , Director, Utility Department		ACTIVITY DATE: 06/23/2021
STAFF: Michelle Luplow	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MINOR
SUBJECT: Scheduled, announced, onsite inspection to determine compliance with the WWTP's two permits for odor control equipment		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow

Personnel Present: Rick Kane, Utility Department Director (rkane@deltami.gov)

Mike McKane, Assistant Utility Department Director (mmckane@deltami.gov)

Purpose

Conduct an announced, scheduled compliance inspection by determining compliance with Delta Township Wastewater Treatment Plant's (WWTP) Permits to Install (PTI) Nos. 140-83 and 140-83B for sodium hypochlorite odor control scrubber systems. This facility was last inspected by the AQD in November 2012.

Facility Background/Regulatory Overview

The Delta Township WWTP treats the city's domestic and industrial wastewater.

The current capacity of the WWTP can treat up to 6 million gallons of wastewater per day (mgd). Rick Kane, Director of Utilities, said that Delta Township is planning on upgrading and rebuilding the WWTP. In 2018 they began the planning stages for this project and in 2020 they began the push for a full rebuild of the facility, employing Tetra Tech consultants to assist with the project and to ensure all regulations are covered for the rebuild.

R. Kane said that the rebuild will occur in 2 phases: Phase 1 is planned to start April 2022 and will take 2 years to complete. Phase 2 is planned to begin in April 2024, which is also planned to take 2 years to complete. R. Kane said that with the rebuild, Delta Township will be able to reach 28 mgd at peak hour flow. He said that the current WWTP will be in full operation during construction of the new plant. Once the new system is fully operational the old plant will be shut down and dismantled, including the equipment permitted under PTI's 140-83 and 140-83B. The plan is to remove the existing permitted odor scrubbers and replace them with activated carbon, which will be capable of running the whole year, versus the biotower scrubber, which has temperature limitations on when it can be operated. They also plan to institute trickling filters and activated sludge, which R. Kane said will reduce the need for odor control.

The AQD has determined that PTI 140-83 and 140-83B can be voided; both of these permits establish requirements for odor control equipment. Recent revisions to Rule 285(2)(m) include the removal of

odor control equipment (Rule 285(2)(m)(iv)) from the list of wastewater treatment processes that require a permit. Additionally, Rule 285(2)(f) only requires permits for control equipment where the control device itself creates a significant or meaningful increase in criteria air pollutants or toxic air contaminants. The 3 odor control systems at Delta Township's WWTP do not generate TACs or criteria air pollutants and therefore they meet exemption Rule 285(2)(f). PTI 140-83 and 140-83B will be voided. R. Kane is in agreement with this decision to void the permits.

Table 1 contains a list of exempt and permitted equipment located onsite. I verified that the facility does not have any wastewater treatment lagoons, sludge incinerators or heat treatment processes.

Table 1. Equipment List

Equipment	Description	PTI/ Exemption	Compliance Status
12,000 scfm odor control system – wet scrubber with sodium hypochlorite	Treats odorous air (sulfur and ammonium compounds) from covered primary clarifier tanks, grit and screening building, and raw sewage pumping building. Located in Grit Handling (Headworks) Building.	140-83	Compliance
Two 22,000 scfm odor control units (operate as one system) for ammonium compounds. Wet scrubber with sodium hypochlorite	Treats air from sludge thickening and dewatering storage building. Located in dewatered sludge storage building. System is not currently treating odors.	140-83	Compliance
Sodium hypochlorite wet scrubber used for sulfur compound odor control.	Treats air from primary tanks and packed towers (Biotowers).	140-83B Issued in 1999.	Compliance
			Compliance

Two First Thermal Systems dual-fueled sweet natural gas/sour gas-fired boilers.	Rated at 1.1 and 1.7 MMBtu/hr. Used to burn digester gas to heat the digester tanks and supplement heat to the building. Manufacture date: 1986	Rule 282(2)(b)(1) & Rule 282(2)(g)	
Flare for excess sour digester gas	Installed 1984/85	Rule 282(2)(g)	Compliance
Fairbanks Morse dual-fueled sweet & sour gas-fired engine	150 kW, 201 HP For emergency backup power during power failures. Serial #: 7325088	Rule 285(2)(g)	Compliance

Inspection

This was an announced, scheduled, onsite compliance inspection. At approximately 1:25 p.m. on June 23, 2021, I met with Rick Kane, Director of Utilities and Mike McKane, Asst Director of Utilities.

I was provided with a tour of the facility with respect to the permitted equipment.

PTI No. 140-83

PTI 140-83 covers the raw sewage and sludge handling facility, which includes primary sedimentation tanks; aerations tanks; clarifier digester; covered primary clarifier tank; grit and screening building; sludge thickening and dewatering storage building; trickling filters; and primary and secondary digesters. The conditions within the permit are for the Pepcon 12,000 scfm sodium hypochlorite wet scrubber, which consists of the sodium hypochlorite spray and recycle system; brine tank; and automatic solution level control system; as well as the two 22,000 cfm odor control sodium hypochlorite wet scrubbers.

The 12,000 scfm scrubber was not operating during the inspection. R. Kane informed me that the two 22,000-scfm scrubbers are offline indefinitely. He said that the circuit board system for the controls no longer works due to corrosion and age, and these circuit boards are no longer manufactured; therefore, odor control no longer occurs. He explained that this unit controlled for ammonia compounds, which are not as odorous and the sulfur-bearing compounds.

The permit has requirements for stack heights and ensuring that the odor control equipment is maintained under a preventative maintenance program. Stack heights for the 3 scrubber systems appear to be greater than the permitted 25 feet above ground level.

R. Kane stated that preventative maintenance on the 12,000 scfm scrubber includes draining the sodium hypochlorite solution from the unit, and acid washing it every 30 days to remove sodium crystals. There are also daily checks on the rectifier set to ensure that it is operational. The rectifier sends voltage through the system to convert the sodium chloride solution to a sodium hypochlorite.

PTI No. 140-83B

PTI 140-83B covers the sodium hypochlorite scrubber which controls odors from the secondary treatment Biotowers. R. Kane said sulfur compounds are expected to be the source of any odors from this unit. He said that 80% of the wastewater treatment odors come from this process.

R. Kane explained that bacteria grow on the plastic media contained in the Biotowers, which consume the biological oxygen demand (BOD) compounds in the sewage. Although the tanks are covered, they are also vented to allow for air to pull through the system.

The wastewater tanks are required to remain covered at all times, and shall not operate the blower unless the exhaust gasses are routed to the sodium hypochlorite scrubber, and the blower must operate when the wastewater temperature is at or greater than 64F.

The scrubber system and associated blower system were operating during the inspection. I detected no odors at this location of the WWTP. R. Kane said this system is always operating if the wastewater temperature is greater than 64F: the scrubbers cycle on and off with the temperature. R. Kane said that the operators will do daily checks (per a checklist) to determine whether or not the blowers are in operation.

The exhaust gases from the odor control system are required to be discharged out of a stack that is at least eight feet above ground level. The stack is greater than 8' high, as it is at least the height of the building which is at least 20' above ground level.

Exempt Equipment

Dual-fueled boilers and Flare

During the 2012 inspection, previous inspector, Brad Myott, requested an analysis of the H₂S concentration in the sour gas that is combusted in the flare and the dual-fueled boilers. The analysis, in conjunction with the AQD SO₂ Emission Rate Worksheet, indicated that the SO₂ emission rate, based on the heat content of the digester gas and the H₂S concentration in ppm (analysis conducted in 2009), is 0.004 lbs SO₂/hour. Exemption Rule 285(2)(g) allows sour gas burning equipment to be exempt, as long as the emission rate is less than 1 lb/hr SO₂.

Mike McKane explained that the waste stream coming into the plant would determine the H₂S concentration in the gas and said that the waste stream hasn't changed in over 20 years. M. McKane and R. Kane said that only a few additional industries have been built in Delta Township (Cintas being one of them), but that these would not contribute to additional sulfur-bearing compounds in their waste gas. He said that industry wastewater typically contains ammonia and phosphates. The

remainder of wastewater is from domestic sewage, which M. McKane indicated stays pretty consistent in terms of its composition. At this time it's my professional judgment that a new gas analysis for H₂S is not required; however, in the future it would be appropriate for AQD to request an exemption demonstration with more recent gas analysis data.

Delta Township also has a Fairbanks Morse dual-fueled (sweet & sour gas) engine used for backup power. The unit is exempt under Rule 285(2)(g) because it is rated at less than 10 MMBtu/hr. R. Kane said the engine was last used in 2013.

Compliance Statement

The Delta Township Wastewater Treatment Plant is currently in compliance with all PTI's and applicable exemptions.



Image 1(22,000 scfm scrubber) : Two 22,000 scfm scrubbers which are no longer operational.



Image 2(12,000 scfm control) : Operational 12,000 scfm sodium hypochlorite odor control system with rectifier set used to convert NaCl to sodium hypochlorite



Image 3(Sour Gas Flare) : Used to combust excess digester gas



Image 4(Secondary Treatment) : Secondary treatment, covered with vents. Treated with biotowers & odors controlled with sodium hypochlorite scrubber.

NAME Michelle Luplow

DATE 7/9/21

SUPERVISOR B.M.