MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Response to Comments Document

APPLICANT DETAILS

Company: Warren Waste Water Treatment Plant (Warren WWTP)

Location: North bank of the Red Run Drain between Thirteen Mile Road and Fourteen Mile Road, east of Van Dyke Avenue and west of Chicago Road in Warren, Michigan

Application No.: APP-2022-0192

Permit No.: 112-24

Project Description: Warren WWTP's application is for the installation and operation of a new sewage sludge disposal process.

Figure 1: Location of Warren Waste Water Treatment Plant

DECISION

The proposed permit was approved, with changes, by the decision maker on October 22, 2024. The decision maker for this project was Chris Ethridge, Assistant Director of the Air Quality Division (AQD) for the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

PURPOSE

The purpose of the Response to Comments document is to discuss the public participation process for Warren WWTP's project, detail the comments received during the comment period and our responses, and discuss the changes made, if any.

PUBLIC PARTICIPATION PROCESS

The public participation process involved providing information for public review including a summary of the proposed project, a technical fact sheet, and proposed permit terms and conditions; a public comment period; a virtual public informational meeting; a virtual public hearing; and the receipt of written and verbal public comments on staff's analysis of the application and the proposed permit.

On June 26, 2024, the AQD communicated about the public comment period in the following ways:

- Copies of the Notice of Air Permit Public Comment Period and Public Hearing and supporting documents were posted at Michigan.gov/EGLEAirPublicNotice.
- 68 persons who had previously expressed interest and had provided a complete email address or mailing address were either emailed or mailed information about the public comment period in an interested party letter.

- A notice announcing the public comment period, the virtual public informational meeting, and the virtual public hearing was placed in the Macomb Daily. The notice provided pertinent information regarding the proposed action; the locations of available information; a telephone number to request additional information; the date, time, and location of the virtual public informational meeting and public hearing; the closing date of the public comment period; and the address where written comments were being received.

- The virtual public informational meeting was held online on August 8, 2024, and approximately 18 people attended. A panel of representatives from EGLE was available to answer questions regarding the proposed project. The meeting began at 6:00 p.m. and concluded at approximately 6:40 p.m. The meeting and public hearing were recorded and is available to view.

- Following the virtual public informational meeting, a virtual public hearing was held the same night. The hearing began at approximately 6:40 p.m. with Jenifer Dixon as the hearings officer and Chris Ethridge as the decision maker. Approximately 17 people were in attendance at the virtual public hearing; no oral comments were provided. The public hearing concluded at approximately 6:47 p.m.

Two written comments and three voicemail comments were received during the public comment period.

SUMMARY OF SIGNIFICANT COMMENTS RECEIVED AND AQD'S RESPONSE

The remainder of this document is a listing of the significant comments received during the public comment period and the department's response. The first section discusses the comments received that resulted in changes to the final permit terms and conditions, if any, and the basis for each change. The last section discusses the department's response to all other significant comments not resulting in changes to the final permit.

Comments Resulting in Changes to the Final Permit

Eight changes were made to the final permit as a result of comments received.

1. Comment

Some of the permit conditions include requirements for the permittee to operate in a "satisfactory manner." While some permit conditions reference satisfactory manner as operating in accordance with the Malfunction Abatement Plan (MAP) for FGBIOCONERS, other permit conditions containing "satisfactory manner" do not further define the term. The permit conditions should define "satisfactory manner" to make the conditions practically enforceable.

AQD Response:

The AQD reviewed the use of "satisfactory manner" in the permit conditions and made several changes to the conditions to address the comment. In most cases, "satisfactory manner" was replaced with alternate language, and in one case "satisfactory" was removed. The specific condition changes are listed below.

Condition Change

The first sentence of EU-NEWSTB-GENERATOR Special Condition (SC) VI.2 was revised to replace “in a satisfactory manner” with “in a manner acceptable to the AQD District Supervisor.”

In SC VI.2 of FGTOHEATERS, the word “satisfactory” was removed.

The first sentence of FGBIOCONERS SC IV.4 was revised to replace “in a satisfactory manner” with “in accordance with Appendix A.”

The first sentence of FGBIOCONERS SC IV.5, IV.6, and IV.7 were revised to replace “in a satisfactory manner” with “in accordance with the site-specific monitoring plan.”

The first sentence of FGBIOCONERS SC VI.9 was revised to replace “in a satisfactory manner” with “in accordance with NSPS Subpart LLLL.”

FGBIOCONERS SC VI.33 was revised to replace “in a satisfactory manner” with “in a manner acceptable to the AQD District Supervisor.”

Other changes to the final permit

In addition to the permit condition changes made based on comments received, the AQD identified an additional change that needed to be made. FGBIOCONERS SC V.1 was revised to remove an extra “after” in the first sentence.

Summary of Significant Comments

This section summarizes the comments received during the comment period that did not result in changes to the final permit. The section is sorted by the type of comment, or what topic the comment was related to.

A. Permit Requirements

1. Comment

The proposed permit only has emission limits for two per-and polyfluoroalkyl substances (PFAS), perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). There are other PFAS compounds and their precursors that are known to be in sewage sludge and that could be emitted from this facility. The ‘Total PFAS’ evaluated by the AQD is probably based on the approximately 40 PFAS compounds listed in United States Environmental Protection Agency (USEPA) Method 1633. The AQD must expand the toxic air contaminant (TAC) list to include additional PFAS compounds beyond just PFOS and PFOA.

AQD Response

As noted in Table 8 in Appendix 2 of the technical fact sheet, 36 PFAS compounds were evaluated for compliance with Rule 225 based on sludge sampling data. These compounds are assumed to be the total PFAS because there is no data for other compounds.

The permit conditions have emission limits for PFOA and PFOS because, based on sludge sampling data, they are the primary PFAS expected to be emitted, and their impacts are close to their Rule 225 health-based screening levels. PFOA and PFOS were evaluated based on their estimated emission rates, which are much lower than the total PFAS emission rate.

The Rule 225 evaluation for the other PFAS compounds assumed, as a worst-case estimate, that each individual compound would be emitted at the total PFAS emission rate. The evaluation found the emissions are less than 50 percent of the acceptable impacts determined by the AQD toxicologists. Furthermore, Rule 226(a) allows exemptions from Rule 225 when the emission rates meet the requirements in Rule 226(a) and the compounds are not carcinogenic or on a list of acutely toxic compounds; these other PFAS compounds qualify for the Rule 226(a) exemption. Therefore, emission limits for other PFAS compounds are not needed since the emissions comply with the AQD toxics rules and are not expected to have impacts that cause a public health concern.

2. Comment

There is a concern that fugitive emissions from the ash lagoons may contain PFAS compounds. Many PFAS compounds are known to sublime or volatilize to ambient air at fairly low temperatures. Warren WWTP should consider designing and implementing a sample plan to confirm that there are or are not fugitive PFAS emissions from the two ash lagoons.

AQD Response

As part of EGLE's Industrial Pretreatment Program for WWTPs, the ash produced by Warren WWTP's multiple hearth incinerator (MHI) was tested for PFAS in 2018. None of the PFAS tested for were detected in the ash. This indicates that the ash lagoons are not a source of PFAS emissions. See the report Evaluation of PFAS in Influent, Effluent, and Residuals of Wastewater Treatment Plants (WWTPs) in Michigan for more information.

In addition, at the emission reduction system (ERS) furnace operating temperature of 1,994°F, no volatile PFAS would be expected to remain in the ash. Volatile PFAS that are not destroyed in the ERS furnaces would be expected to leave with the combustion exhaust air and be routed through the air pollution control devices. Any PFAS not removed by the control devices would be emitted through the exhaust stack. The residual PFAS emissions are expected to be too low to detect during an emission test.

3. Comment

The proposed MAP for the new process does not include requirements and frequency for calibration of key monitoring devices. Warren WWTP should add calibration of key monitoring equipment to the MAP, including manufacturer recommended calibration methods and frequency.

AQD Response

Warren WWTP has not yet identified the specific equipment that will be used so they can't identify specific calibration requirements. This information, once known, will be included in the MAP or the site-specific monitoring plan.

4. Comment

The USEPA requested that performance testing on the BioCon ERS process for the following be included: volatile organic compounds, particulate matter (both at the 10 micron and less than 2.5 micron level), carbon monoxide (CO), hazardous air pollutants (HAPs), mercury, beryllium, oxides of nitrogen, sulfur dioxide, hydrogen chloride, dioxins/furans (total mass basis) and/or (total equivalency basis), cadmium, and lead.

The USEPA also requested that Veolia conduct PFAS stack testing using OTM-45 to better understand the potential thermal destruction of PFAS by the BioCon ERS system.

The USEPA also requests that Veolia share a copy of the test protocol, before conducting any tests, with both the USEPA and EGLE, as well as including the USEPA in any notifications from the company for such testing and sharing any test results with the USEPA, especially for PFAS.

AQD Response

The permit conditions require testing for all pollutants requested by the USEPA except for CO and HAPs. Instead of testing for CO, the permit requires continuous emission monitoring. The permit requires testing for specific HAPs, as required by federal regulations, but does not require testing for total HAPs.

The permit conditions require emission testing using OTM-45 to demonstrate compliance with the PFOA and PFOS emission limits. In addition, Warren WWTP is required to use OTM-50 to determine the PFAS destruction efficiency (DE) using a Principal Organic Constituent.

The permit requires Warren WWTP to submit test protocols, test results, and test notifications to EGLE. We cannot require Warren WWTP to submit these to the USEPA, other than as required by the New Source Performance Standard (NSPS) Subpart LLLL for New Sewage Sludge Incineration Units. However, we expect to work cooperatively with the USEPA, especially for PFAS testing and will share results with the USEPA.

5. Comment

According to the USEPA "There is a critical need to assess the efficacy of existing and emerging thermal treatment methods to completely destroy or mineralize PFAS. Currently, most assessments of thermal treatment methods use targeted PFAS quantification of a limited number of compounds. This targeted approach can overlook products of incomplete combustion (PICs). Non-targeted analysis (NTA) of PFAS is required to properly assess the efficacy of these thermal treatment methods and to determine the fate of these compounds in thermal treatment systems.

One of the findings from the USEPA Pilot-Scale Thermal Destruction of Per- and Polyfluoroalkyl Substances in a Legacy Aqueous Film Forming Foam study was that the "results suggest that DE alone may not be the best indication of total PFAS destruction, and additional PIC

characterization may be warranted." A potential resolution would be to add a condition to the proposed air permit that Warren WWTP must perform an initial stack test that includes PICs and NTA of PFAS. Short-chain fluorinated carbons such as carbon tetrafluoride, fluoroform, hexafluoroethane, and octafluoropropane may be good indicators of broader PFAS defluorination.

AQD Response

The permit conditions require Warren WWTP to verify compliance with the PFOS and PFOA emission limits using USEPA Other Test Method 45 (OTM-45), which can detect up to 50 PFAS compounds. Warren WWTP is also required to determine the PFAS DE using OTM-50, which can detect 30 volatile fluorinated compounds, including those mentioned by the commenter, and other PICs. Note, the AQD worked with USEPA staff who developed OTM-45 and OTM-50 to develop the PFAS DE test requirement in the permit conditions.

B. Public Health and Environment Concerns

1. Comment

Records indicate that Warren WWTP's treated effluent contains parts per trillion levels of PFAS. Using the treated effluent could result in PFAS contamination of ancillary equipment to the incinerator, other process cooling water systems, other interconnected systems, and/or surfaces where employees work. There is potential for leaks and releases that may contaminate surfaces and expose workers during and after cleaning up the release.

Warren WWTP should take precautions to assure this cannot happen and standard operating procedures and the MAP should include information explaining the impacted system, the hazards of exposure to PFAS, and precautions that must be taken in the event of a release from the impacted equipment.

AQD Response

The AQD does not have the regulatory authority to evaluate potential PFAS exposures of workers in the Warren WWTP. Employee safety is regulated by the federal Occupational Health and Safety Administration and the Michigan Occupational Health and Safety Administration.

2. Comment

Residents are going to be subjected to detrimental air quality.

AQD Response

The project is expected to result in lower air pollutant emission rates than the current sewage sludge disposal process. The technical fact sheet has information about the potential air pollutant emission rates and how they were evaluated for compliance with the applicable air quality rules and regulations. Table 6 of the technical fact sheet shows how we determined that the potential criteria pollutant emissions from the proposed project would comply with the USEPA's National Ambient Air Quality Standards. These standards are intended to protect public health. Tables 7 and 8 of the technical fact sheet show how we determined the potential TAC emissions from the proposed project would comply with our health-based screening levels.

Based on these analyses, we do not believe the proposed project will be detrimental to the air quality around the facility.

C. Air Toxics and Risk Assessment

1. Comment

The AQD should expedite the development of screening levels and permit limits for additional and most prevalent PFAS compounds.

AQD Response

The AQD will continue to evaluate PFAS compounds under our air toxics rules as information becomes available. Permit limits for PFAS compounds may be established on a case-by-case basis through the PTI application review process, like those for Warren WWTP.

D. Permit Review Process

1. Comment

How were the total PFAS emission rates of 3.62 x 10^{-5} pounds per hour and 0.317 pounds per year determined? Is it possible to monitor and enforce these two PFAS estimates as actual permit terms and conditions?

AQD Response

Warren WWTP estimated the total PFAS emission rates by assuming the total PFAS concentration in the sludge is 200 nanograms (ng) of PFAS per gram (g) of sludge and using the maximum sludge processing rate of 7,930 tons per year for both ERS furnaces, 8,760 hours per year of operation, and the required 90 percent PFAS destruction efficiency, as follows. Note, ng/g is equivalent to parts per billion (ppb).

$$7{,}930\frac{tons\ sludge}{year} * 2{,}000\frac{lb}{ton} * 453.6\frac{g}{lb} * 200\frac{ng\ PFAS}{g\ sludge} = 1.44\ x\ 10^{12}\frac{ng\ PFAS}{year}$$

$$1.44\ x\ 10^{12}\frac{ng\ PFAS}{year} * 1\ x\ 10^{-9}\frac{g}{ng} * \frac{lb}{453.6\ g} * \frac{100-90}{100} = 0.317\frac{lb\ PFAS}{year}$$

$$0.317\frac{lb\ PFAS}{year} * \frac{year}{8{,}760\ hours} = 3.62x\ 10^{-5}\frac{lb\ PFAS}{hour}$$

EGLE's Water Resources Division test data for the sludge produced at Warren WWTP shows total PFAS in the sludge is well below 200 ppb. Test data from November 2021 shows total PFAS was 51.94 ppb, not including compounds below the detection level. Assuming all compounds not detected are present at their detection levels results in 72.71 ppb total PFAS in the sludge.

The estimated PFAS emission rates are not included as emission limits in the permit conditions because of the difficulty in demonstrating compliance through emission testing.

The PTI requires Warren WWTP to periodically test the PFAS content of the sludge feed to the new process and conduct PFAS air emission test using OTM-45 and OTM-50, including testing the PFAS destruction efficiency using a Principal Organic Constituent, such as hexafluoroethane. This testing will allow the AQD to estimate the PFAS emission rate from the new process, as well as emission rates of any PICs addressed by OTM-50.

E. Miscellaneous

1. Comment

The city, EGLE AQD, the Michigan PFAS Action Response Team (MPART), and Region 5 USEPA should commit to a cooperative agreement to investigate potential historic impacts to surrounding soil, surface water, and groundwater from the existing Warren WWTP MHI, with frequent communications to the Warren community. This would appear to be in line with the existing EPA and EGLE November 3, 2000, Memorandum of Understanding and March 7, 2002, Technical Agreements on Corrective Action. Environmental contamination has occurred in places like Merrimack, NH, near a St Gobain facility; Cordova, IL, near a 3M facility; and Cohoes, NY, near the Norlite facility.

AQD Response

The AQD does not have the authority through the PTI process to evaluate historic emissions from Warren WWTP's MHI. Note the facilities the commenter referred to are not comparable to Warren WWTP because they used PFAS in production, produced PFAS, and burned PFAS containing hazardous waste.

2. Comment

The USEPA stated in their Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances—Version 2 (2024) that, "EPA is planning to collect additional information and conduct additional research to better understand PFAS destruction and evaluate emission control efficiency. EPA is working to develop a standardized validated methodology for measuring PFAS gaseous emissions; however, EPA also lacks detailed information on the amounts and concentrations of PFAS-containing materials that are generated and managed in thermal treatment devices." This appears to be a perfect opportunity for a cooperative effort between EGLE AQD and Region 5 USEPA.

This project should be used as a larger pilot to gain a better understanding of emissions from sewage sludge incinerators and further assess potential PICs and non-targeted PFAS compounds. The startup and initial operation of the proposed incinerator should be closely followed and used to continue to learn about the thermal destruction and total mineralization of PFAS from this and similar processes.

AQD Response

Obtaining additional information on PFAS destruction is an important goal. EGLE is following work being done by the USEPA and others (refer to the MPART Air Quality Workgroup website for more information) as information continues to evolve. The PTI process allows us to require Warren WWTP to conduct emission testing to demonstrate compliance with the applicable air quality rules and regulations. We cannot require Warren to collect additional information, including conducting additional testing, that is not required by the PTI.

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