



GRETCHEN WHITMER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF  
ENVIRONMENT, GREAT LAKES, AND ENERGY  
GRAND RAPIDS DISTRICT OFFICE



LIESL EICHLER CLARK  
DIRECTOR

March 24, 2022

**VIA EMAIL AND U.S. MAIL**

Mr. Ellis Mitchell, City Manager  
City of Benton Harbor  
200 Wall Street  
Benton Harbor, Michigan 49022

WSSN: 00600  
County: Berrien

Dear Mr. Mitchell:

**SUBJECT:** City of Benton Harbor Compliance update for  
Amended Administrative Consent Order (AACO) AACO-399-07-2019;  
2021 Sanitary Survey Significant Deficiencies

The Department of Environment, Great Lakes, and Energy (EGLE), Drinking Water and Environmental Health Division (DWEHD) has noted progress by the City of Benton Harbor Water Supply (City) to meet specific requirements of Section II – Compliance Schedule of the first amended Administrative Consent Order (AACO) entered on August 7, 2020. We provide an update on the Paragraphs from the AACO that have been met, below as well as in the attached Exhibit A.

**Paragraph 2.14 – Technical, Managerial, and Financial Capacity (TMF) Study**

The City has submitted a draft TMF Study, completed by Fleis & VandenBrink Engineering, on February 7, 2022. EGLE acknowledges the City's compliance with this extended deadline. According to the AACO, EGLE review will proceed immediately in a timely manner. At such time the TMF Study is approved by EGLE, additional AACO compliance schedule items are triggered, namely paragraphs 2.8, 2.10 (a) and (b), 2.15 (a) and (b).

The City water supply representatives have also been working to address significant deficiencies, as identified in the EGLE 2021 Sanitary Survey letter, dated November 2, 2021. As noted in the letter, significant deficiencies are serious sanitary deficiencies identified in water systems which include, but are not limited to, defects in design, operation, maintenance, or a failure or malfunction of the sources; treatment, storage, or distribution systems that are determined to be causing, or have the potential to cause, contamination into the public water supply. The deadline for correcting these significant deficiencies was 120 days from the date of the letter, or March 2, 2022. Following are updates on the compliance status for each significant deficiency that does not have a Corrective Action Plan, as outlined in the AACO:

**Finished Water Reservoirs missing vent screens and less than 24-inches above grade, access hatches not water tight and sanitary, with one hatch having crumbling concrete.**

Work was completed by water system staff and Peerless Midwest to correct these significant deficiencies regarding air vents and access hatches, and documentation was submitted to EGLE, via email, on January 7, 2022. The above significant deficiencies are now closed.

*EGLE also recently received photo confirmation that the crumbling concrete around one of the reservoir hatches is an access point for an isolation valve vault. Because the valve vault was flooded and is necessary to function properly for isolation of the reservoir for inspection purposes, EGLE recommends dewatering of the valve vault(s) and verifying the isolation valve functionality. The required action to conduct a professional inspection of the reservoir, including the valve vaults should be completed as soon as possible, but not later than December 31, 2022. Included in the inspection should be documentation of the overflow and any risks associated with cross connection to sewer.*

**Monthly Operation Report (MOR) has various inaccuracies, and pre-filled answers to questions on first page.**

EGLE acknowledges the work by water system representatives to address concerns with the monthly operation report template. EGLE granted approval, on February 2, 2022, for the improved MOR template, and the January 2022 MOR submittal formally adopted the use of the approved template. EGLE considers this significant deficiency resolved.

*While the significant deficiency has been resolved, a minor deficiency is being created due to the following items:*

1. EGLE was made aware of a discovery regarding the post-chlorination feed point, which was presumed to be fed at the filter influent piping. By following piping from active chlorine feed pumps, water system representatives concluded the location of post-chlorination is in fact into the high service suction well. Since this feed point impacts the chlorine residual on the entry point to distribution, the chlorine analyzer at that location is not representative of water in the finished water reservoirs. In order to accurately study the disinfection segment including the reservoirs, a sample point must be located upstream of the high service suction well feed point and downstream of the reservoirs. Alternatively, the post-chlorination feed point may be changed to the filter influent piping location.

The deadline to submit a plan to address this deficiency is April 15, 2022.

**CL17 broken during site inspection, not doing 4 hour grabs, no maintenance or Standard Operating Procedure (SOP).**

EGLE received a formal submittal, via email, from water system representatives, on February 24, 2022, to document the work to satisfy this significant deficiency. Based on the information provided, EGLE has determined the significant deficiency has been resolved.

*While the significant deficiency has been resolved, a minor deficiency is being created due to the following items:*

1. The standard operating procedure submitted references an annual maintenance and cleaning by a Hach service technician. It also states, "The system requires little routine maintenance". EGLE would prefer the SOP outline the specific maintenance items needed for future reference. Examples may include changing tubing and cleaning of sample cell(s).
2. The SOP does not include description of verification process for the online analyzer(s), but references "occasional calibration checks". The SOP should outline the process for instrument verification checks, note the allowable percent error in this process, and describe verification of record keeping.
3. The Environmental Protection Agency (EPA) method requires the instrument(s) be verified against a laboratory method that is checked with a known/verified standard. Currently, the Benton Harbor laboratory uses a ferrous ammonium sulfate titration (EPA Method 330.4) for benchtop analysis, which cannot be checked against the standard.
4. The instrument verification records submitted do not include the redundant chlorine analyzer now installed. Routine verification of both analyzers, as needed, ensure they are both in working condition.
5. Completion of this minor deficiency must include submittal of a signed version of the revised SOP by both the city manager and the staff acknowledgment.
6. Alarms for high and low chlorine analyzer residual readings should be programmed for both (redundant) chlorine analyzers.

The deadline to address this deficiency is May 25, 2022.

**Turbidimeter calibration records not formally kept, staff not trained and no SOP.**

EGLE received a formal submittal, via email, from water system representatives, on February 24, 2022, to document the work to satisfy this significant deficiency. Based on the information provided, EGLE is confident the instruments were recently calibrated and determined the significant deficiency has been resolved.

*While the significant deficiency has been resolved, a minor deficiency is being assessed due to the following items:*

1. The definition in the SOP for verification should reference the use of secondary standard.
2. The SOP must outline the process using the secondary standard to verify instrument accuracy between primary standard calibrations. EGLE recommends verification with secondary standards at least monthly. If primary standard calibrations are completed monthly, the secondary standard verification may be done more often, or as needed.
3. The calibration records submitted did not include readings with the secondary standard. The instrument calibration records must include a reading of the measured nephelometric turbidity units (NTU) using the secondary standard, after completing the calibration with primary standard. The SOP must clearly indicate what conditions constitute a passing and failing calibration and secondary standard reading.
4. Completion of this minor deficiency must include submittal of a signed version of the SOP by both the city manager and the staff acknowledgment.

The deadline to address this deficiency is May 25, 2022.

**Evidence of unprotected opening of suction well, on floor of venturi room (plywood with tar).**

EGLE received a formal submittal, via email, from water system representatives, on February 24, 2022, to document the work to satisfy this significant deficiency. The work included visual inspection of the suction well ceiling through the access hatch, and removal of material from the floor of the venturi room, above the suction. Based on the information provided, EGLE has determined the significant deficiency has been resolved as no evidence of a sanitary hazard has been confirmed in the investigation.

*A minor deficiency has been identified due to concerns over the cracking in the suction well ceiling and lack of professional inspection of this finished drinking water storage tank.*

1. The water system must arrange for a professional inspection of the suction well tank, submit the inspection report and any proposed work to EGLE, and address the cracking in the ceiling as needed to assure safe structural conditions.

*A second minor deficiency has been identified due to concerns over a potential cross connection on the suction well overflow pipe.*

2. During an inspection on November 10, 2021, EPA staff observed the pipe discharge in an overflow trough in the basement of the water plant, discharging to a sewer. EGLE's investigation was not conclusive as to potential for backflow and necessary preventive measures, as well as

creation of hydraulic restrictions. An assessment of risk of backflow and needed corrective action must be completed to ensure protection of the finished drinking water.

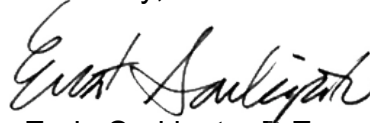
The deadline to address these deficiencies is December 31, 2022.

**Verify treatment chemicals are approved under ANSI/NSF Standard 60.**

EGLE received formal submittal, via email, from water system representatives, on January 31, 2022, regarding the sodium fluoride chemical from Solvay Fluorides, LLC. The documentation was sufficient to verify the chemicals from the supplier facilities and were listed on the NSF website for approval with drinking water use. EGLE considers this significant deficiency to be resolved.

If you have any questions regarding the AACO or Sanitary Survey requirements and deadlines, please contact me at 616-307-0261; or by email at SarkipatoE@Michigan.gov

Sincerely,



Ernie Sarkipato, P.E.

Surface Water Treatment Specialist

Drinking Water and Environmental Health Division

Enclosure

cc: Mayor Marcus Muhammad, City of Benton Harbor (via email)  
Ms. Kimberly Thompson, City of Benton Harbor (via email)  
Ms. Beth Murphy, EPA Enforcement and Compliance Assurance Division (via email)  
Mr. Abul Ahmed, Fleis & Vandenbrink Operations (via email)  
Mr. Darold Harlan, Fleis & Vandenbrink Operations (via email)  
Mr. Eric Oswald, EGLE (via email)  
Mr. Brian Thurston, EGLE (via email)  
Mr. Mike Bolf, EGLE (via email)  
Ms. Maureen Nelson, EGLE (via email)

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY  
DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION

FIRST AMENDED ADMINISTRATIVE CONSENT ORDER

DWEHD Order No. AACO-399-07-2019

**EXHIBIT A (Updated March 25, 2022)**

In the matter of the first amended administrative consent order between the City of Benton Harbor and the State of Michigan Department of Environment, Great Lakes, and Energy, below are listed compliance activities that have been completed and are shown for record of completion.

- 2.1 (a) Submit to the DWMAD a completed rate study from a qualified professional consultant. (This requirement was completed with the Asset Management Plan, dated December 2017, however, the second portion of 2.1 in the original ACO, requiring the City of submit an implementation rate increase plan was not completed).

COMPLETION DATE: December 31, 2017

(b) Not later than December 31, 2020, the City shall begin implementation of a rate adjustment plan for the City of Benton Harbor, in accordance with the findings in the City's asset management program and rate study. The rate adjustment plan shall ensure rates are sufficient to operate and maintain the water system in compliance with Act 399.

COMPLETION DATE: May 18, 2020

- 2.2 Upgrade the water plant supervisory and data acquisition (SCADA) system to allow for storage and easy access to required regulatory data including turbidity and chlorine, alarming for regulatory minimum levels, and potentially automation of some water plant operations, no later than April 1, 2019.

COMPLETION DATE: August 12, 2019

- 2.3 Install metering capabilities on the finished water (completed as part of corrosion control treatment project).

COMPLETION DATE: August 12, 2019

- 2.4 Make necessary improvements to the water treatment facility in order to have a functioning and reliable continuous chlorine analyzer on the finished water tap no later than April 1, 2019.

COMPLETION DATE: August 12, 2019

- 2.5 Obtain an adequately licensed operator in charge, solely dedicated to the water distribution system, no later than April 1, 2019.

COMPLETION DATE: May 7, 2019

- 2.6 Submit a proposal for optimal corrosion control treatment or a corrosion control study to the DWMAD no later than April 31, 2019.

COMPLETION DATE: Treatment installed as of March 25, 2019. Corrosion control study insufficient as of June 2020, see First Amended ACO item 2.17.

- 2.7 **Not later than September 30, 2020**, the City shall formally adopt a consistent and equitable rate collection program to minimize the number of unpaid bills and streamline the collections process.

COMPLETION DATE: September 29, 2020

- 2.8 **Not later than August 15, 2020**, the City shall submit the current cross connection program to the DWEHD for review. The DWEHD's review and comments on the current program will assist the City in completing the Capacity Study in paragraph 2.14.

COMPLETION DATE: August 15, 2020

**No later than three (3) months following the completion of the Capacity Study**, an updated cross connection program must be submitted to the DWEHD for review to address any implementation changes as a result of the study.

COMPLETION DATE: not yet completed

- 2.9 Install necessary modifications at the water treatment plant to inject coagulant chemical at a DWMAD-approved rapid mix location, and develop a standard operating procedure for feeding coagulant, no later than June 1, 2019.

COMPLETION DATE: August 9, 2019

- 2.13 **Not later than August 31, 2020**, the City shall repair filter to waste valves at the water plant, and train operators on their use.

COMPLETION DATE: August 31, 2021

- 2.14 **Not later than September 30, 2020**, The City shall submit to the DWEHD, for review and approval, a project scope for completion of a technical, managerial, and financial capacity study.

COMPLETION DATE: September 25, 2020

**Not later than six (6) months following approval of the project scope, the City shall submit a completed Capacity Study for DWEHD approval.**

COMPLETION DATE: February 7, 2022

- 2.17 **Not later than September 30, 2020**, the City shall have a qualified third-party consultant submit to the DWEHD, for review and approval, a corrosion control optimization study scope and completion schedule, in accordance with the February 13, 2020, letter the

DWEHD issued to the City.

COMPLETION DATE: July 28, 2020, but this plan was found to be insufficient.

**Not later than sixty (60) days** following DWEHD approval of the corrosion control optimization study scope and completion schedule, the City shall secure a signed contract for the corrosion control optimization study.

COMPLETION DATE: Pending DWEHD written notification of approval of study scope submitted by Cornwell Engineering on September 16, 2021.