



GRETCHEN WHITMER
GOVERNOR

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



PHILLIP D. ROOS
DIRECTOR

March 15, 2025

VIA EMAIL AND U.S. MAIL

Alex Little
Interim City Manager
City of Benton Harbor
200 Wall Street
Benton Harbor, Michigan 49022

WSSN: 00600
County: Berrien

Dear Alex Little:

SUBJECT: Significant Deficiency Violation Notice (SDVN); Benton Harbor; 2025 Water System Sanitary Survey (Survey)

This letter confirms the Department of Environment, Great Lakes, and Energy's (EGLE) meetings with the City of Benton Harbor (City) water system contractors to conduct a Survey of the City's water system and to present the final findings, discuss areas for improvement, and identify timelines for corrective action where appropriate. The purpose of a Survey is to evaluate the water supply system with respect to the requirements of the Michigan Safe Drinking Water Act, 1976 PA 399, as amended (Act 399). It is also an opportunity to update EGLE's records, provide technical assistance, and identify potential risks that may adversely affect drinking water quality. Enclosed is a copy of the Sanitary Survey summary (Table 1) for your reference.

During the Survey, EGLE met with the City's water system contract operator, F&V Operations and Resource Management (F&V), and the City's water system engineering firm, Abonmarche. F&V was represented by Kyle Tryan, Abul Ahmed, Darold Harlan, Rob Jones, and Bill Dustin. Abonmarche was represented by Jason Marquardt. EGLE, F&V, and Abonmarche met virtually on December 10, 2024, December 12, 2024, and January 29, 2025. EGLE and F&V met at the plant and conducted inspections of the plant, pump station, and elevated storage tank on January 16, 2025.

Since the last Survey (2021), EGLE acknowledges the City (along with F&V and Abonmarche) completed numerous water system facility and operational improvements. These improvements addressed many of the deficiencies from the prior Survey as well as some compliance schedule items in the administrative consent order executed by EGLE and the City (AACO-399-07-2019, August 2020). Enclosed Table 2 lists the improvements made since the last survey. As shown in Table 2, the City and its contractors completed actions that addressed 71 of the significant deficiencies, deficiencies, required actions, and recommendations from EGLE's 2021 Survey.

The following table summarizes EGLE’s final findings from the 2025 Survey of the water system:

Survey Element	Findings
Source	Deficiency Identified
Treatment	Deficiencies Identified
Distribution System	Significant Deficiencies Identified
Finished Water Storage	Deficiencies Identified
Pumps	Required Action Identified
Monitoring & Reporting	Required Action Identified
Management & Operations	Significant Deficiency Identified
Operator Compliance	No Deficiencies/Recommendations
Security	Required Actions Identified
Financial	Significant Deficiency Identified
Other	Recommendation Made

Several of the above findings were also identified during the 2021 Survey. EGLE recognizes the City completed many water system improvements to address other findings from the last survey. EGLE also recognizes many of the improvements still require considerable planning and design. EGLE appreciates the professionalism and hard work of the City’s contractors, F&V and Abonmarche, and the many structural and operational improvements to the City’s water system that they effectively implemented.

Significant Deficiencies:

Significant deficiencies (SD#) represent an immediate health risk to consumers of water and are violations of Act 399 and the promulgated rules. 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.

Significant deficiencies must be corrected within 120 days of the date of this letter, or a Corrective Action Plan, approved by EGLE, must be completed within 120 days of the date of this letter. Failure to meet the 120-day deadline is a treatment technique violation. EGLE expects to negotiate a Corrective Action Plan with the City and expects

the agreed upon Corrective Action Plan and schedule to be incorporated into an amended administrative consent agreement (ACA).

During the Survey, three significant deficiencies were identified.

- SD1. Distribution System - Hydrants and Valves: R 325.11105 requires a water distribution system to meet peak demands, including fire flow demands. R 325.11108 requires sufficient valves in the distribution system to minimize interruptions in service and minimize sanitary hazards during construction or repairs. Hydrant flushing and valve exercising programs are critical activities for maintaining working hydrants and valves and complying with these rules. The City needs to develop and implement a hydrant flushing and valve turning program. EGLE understands the City and its contractors have been completing hydrant flushing and valve turning work and that further work will be completed by F&V per the operations contract with the City, dated January 1, 2025.
- SD2. Distribution System – Cross Connections: R 325.11404 requires a water supply to implement a comprehensive control program. The City has not implemented a cross connection control program meeting the requirements of the rule. A revised cross connection control program must be developed, submitted to EGLE, and then implemented. This program must include a schedule showing how the requirements of R 325.11404 will be met. EGLE understands that the City and F&V recently hired HydroCorp to develop and implement the City's cross connection control program (per the contract dated January 21, 2025).
- SD3. Management & Operations and Financial – Capacity Development: The 2021 Survey identified a significant deficiency with the City's technical, managerial, and financial (TMF) capacity to maintain and operate the water system. EGLE identified the capacity deficiency due to the plant and system condition and several instances of noncompliance with Act 399. A subsequent capacity study, completed by the City per the administrative consent order in 2023, identified a gap between water system revenues and funds needed to maintain and operate the system. Recently, the City took actions to increase collections (negotiating payment of overdue bills and turning off unpaid services) and the City plans to increase permit fees. Since the 2021 Survey, the City and its contractors demonstrated improved technical and managerial capacity to operate the system and maintain compliance with Act 399. However, substantial improvements are still needed. Several of the needed improvements identified during the 2021 Survey were completed and/or included in the City's capital improvement plan. Several other improvements identified in the 2021 Survey still need to be planned for and/or addressed. The 2025 Survey identified additional needed capital improvement and repair projects. The City's capital improvement plan and financial capacity evaluation must account for projects identified in the 2025 Survey. Additional capital improvements and repairs, identified in the 2025 Survey, are listed in the attached Table 3.

Deficiencies:

Deficiencies (D#) are violations of Act 399 and the promulgated rules, which include defects in a water system's infrastructure, design, operation, maintenance, or management that cause, or may cause, interruptions to the "multiple barrier" protection system and adversely affect the system's ability to produce safe and reliable drinking water in adequate quantities.

During the Survey, eight deficiencies were identified and are listed below:

- D1. Source – Construction and Maintenance: The hypochlorite chlorite feed to the water treatment plant intake isn't operational. Recommended Standards for Water Works (RSfWW), Section 3, requires surface water intakes to provide for control of biological growth, such as zebra mussels. The hypochlorite feed to the intake functioned previously. Since the plant is equipped with only one intake and raw water pipe, obstruction of the intake or pipe by mussels could jeopardize the plant's ability to produce water.
- D2. Treatment – Disinfection: The bulk hypochlorite delivery connections at the plant are not equipped with containment. RSfWW, Section 5, requires containment for chemical delivery connections. Only one hypochlorite transfer pump exists at the plant. It appears the plant design and/or construction included provisions for a second pump. R 325.10611a requires the plant to maintain a minimum chlorine residual in water pumped to the distribution system. The hypochlorite transfer pump represents a single point of failure for the disinfection process. Without a backup, pump failure would jeopardize the plant's ability to maintain disinfection requirements.
- D3. Treatment – Pretreatment: The alum bulk storage tanks, transfer pumps, and associated piping are in poor condition and appear past their useful lives. R 325.10611 requires the plant to properly operate water treatment processes to achieve removal or inactivation of waterborne pathogens. Proper operation of water treatment processes at the plant includes feeding alum for coagulation. The alum storage and pumping system must be reliable and operational at all times during water treatment.
- D4. Treatment – Pretreatment: Plant piping includes a bypass of the coagulation, flocculation, and sedimentation processes. EGLE understands the valve on this piping is closed, however, valves can be accidentally opened and do leak. R 325.11008 prohibits a bypass of coagulation or sedimentation. Any water flowing through this piping would not receive complete treatment and would be a violation of R 325.10611.

- D5. Treatment – Filtration: The filter wash arms are not fully functional. This reduces the effectiveness of backwash, limits the effectiveness of the filtration process, and compromises the plant’s ability to maintain with R 325.10611. Filters 1 through 4 are not in use and have not been properly abandoned. The treated water piping for filters 1 through 4 is still connected to the piping from the other filters. Stagnant water in unused filters and piping poses a cross connection risk.
- D6. Distribution System – Construction & Maintenance: The Grand Boulevard pump station is not in use and may still be connected to the distribution system. Isolation of this station from the distribution system could not be verified during the Survey. The station piping could present a cross connection risk.
- D7. Finished Water Storage – Construction & Maintenance: The plant high-service suction well overflow pipe is not equipped with a screen or check valve. The overflow discharges to a drainpipe with an unknown outlet that is also used for other plant water discharges. The overflow and drainpipe pose a risk of cross connection. Per R 325.1112, storage tanks shall have no unprotected openings. Section 7 of RSfWW requires the following on tank overflows: a) size 24, non-corrodible mesh and a flap valve or b) a duckbill check valve. Also, the suction well access hatch doesn’t meet the standards of Section 7 of RSfWW. The suction well access hatch is not equipped with a gasket.

The plant reservoir overflow was not inspected during the survey. It is not clear from drawings or other records if the reservoir overflow is equipped with a screen, check valve, or protected in some way. The plant reservoir access hatches do not meet standards in RSfWW. Section 7 of RSfWW requires ground level or flat roof storage tank access manholes (or hatches): be elevated at least 24 inches above the top of the tank or covering sod, whichever is higher; be fitted with a solid watertight cover which overlaps the framed opening and extends down around the frame at least two inches, with the frame at least four inches high; be equipped with a cover hinge on one side; and be equipped with a locking device. EGLE recognizes the plant construction project currently being implemented by the City will include upgrading the reservoir hatches to meet standards.

- D8. Management & Operations – Owner Responsibility: The City is not accurately calculating or tracking water billed (or paid for) versus water supplied. This information is critical for identifying distribution system problems and needed to improve the City’s financial capacity. R 325.11111 requires a public water supply to maintain adequate records on the operation of the water distribution system. Water billed versus water supplied is a system record required by rule.

To return to compliance, complete the necessary improvements by the dates indicated in the following table. Note, it is possible these required corrective actions and dates will be superseded by or incorporated into an administrative compliance agreement.

Deficiency	Required Corrective Action	Due Date
D1 Source	Inspect intake and intake pipe annually until hypochlorite and anti-scalant feed operational	12/31/25 and ongoing
	Submit plan to repair hypochlorite and anti-scalant feed to intake that describes approach and includes a proposed schedule	12/31/25
D2 Disinfection	Develop plan for hypochlorite bulk loading containment and include in the City's capital improvement plan (CIP)	12/31/25
	Procure spare hypochlorite transfer pump	12/31/25
D3 Pretreatment	Develop a plan for upgrading alum storage, including containment for loading, and include in CIP	12/31/25
	Procure spare alum transfer pump to improve reliability of aged system	12/31/25
D4 Pretreatment	Develop a plan to eliminate, isolate (with blind flange), or lock out pretreatment bypass piping and include costs in CIP	12/31/25
D5 Filtration	Upgrade/replace filter wash arms (part of planned project, Act 399 permit - ACT-370628)	6/30/26
	Properly abandon and/or isolate filters 1-4 piping (media removal part of planned project, Act 399 permit - ACT-370628)	12/31/26
D6 Distribution System	Isolate Grand Boulevard pump station from the active distribution system with closed and locked out valves	12/31/25
D7 Finished Water Storage	Develop plan and Act 399 application for protecting high-service suction well overflow	12/31/25
	Install gaskets on the high-service suction well hatch (part of planned project)	12/31/26
	Evaluate plant reservoir overflow protection during planned inspection, develop plan to add protection (screen or duckbill) as needed	12/31/25
	Install reservoir overflow protection	12/31/26
	Upgrade reservoir hatches to meet standards in RSfWW (work planned, 399 permit ACT-370628)	6/30/26
D8 Management & Operations	Estimate accurate and complete records of unbilled water including what is used by the fire department (flushing, firefighting, etc.), develop standard operating procedure for tracking unaccounted water, and provide estimate of unaccounted water to EGLE	12/31/25

Required Actions:

Required actions (RA#) are not deficiencies but must be completed by the dates indicated to avoid a potential deficiency or significant deficiency violation. During the Survey, 29 required actions were identified. Please see the attached Table 1 for descriptions of the required actions and the due dates associated with each required action. Please note, required actions include structural or capital improvements (e.g., filter upgrades), additional equipment (e.g., spare hypochlorite feed pump), and operational improvements (e.g., utilizing a work order system capable of interfacing with the City's geographic information system or GIS and asset management programs.).

Recommendations:

Recommendations (R#) are suggestions the public water supply should consider, to enhance its operations and services, and to avoid future deficiencies. During the Survey, 25 recommendations were identified. Please see the attached Table 1 for the recommendations.

Water Treatment Plant Capacity:

The water treatment plant capacity was previously rated by EGLE as 8 million gallons per day (MGD). This capacity far exceeds current demands (the maximum day demand over the last ten years was 2.6 MGD). The previously rated plant capacity was based on a high-service pump (HSP) capacity greater than the existing high-service pump capacity. Currently, three high-service pumps are operational (HSP-1, HSP-4, and HSP-5) for a total capacity of 9 MGD, and firm capacity of 4.8 MGD. EGLE understands the City does not intend to repair or replace additional high-service pumps. **Consequently, with this Survey, EGLE is re-rating the plant capacity as 4.8 MGD.** In the future, the City can increase the plant's rated capacity through the addition of one or more operational high-service pumps.

EGLE's investigation is considered complete. The significant deficiencies begin as of the date of this letter and will continue until the City completes corrective actions. The City must complete corrective actions within 120 days of the date of this letter or be in compliance with a Corrective Action Plan and plan schedule approved by EGLE. Please contact EGLE within 30 days of the date of this letter to discuss appropriate corrective actions. You must also notify EGLE, in writing, within 30 days of correcting a significant deficiency.

If you have any factual information that you would like EGLE to consider regarding the significant deficiencies identified in this SDVN, please provide it in a written response to EGLE by April 15, 2025.

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Please note, the City is required to provide special notice in its annual consumer confidence report for any significant deficiency that remains unresolved at the time the report is distributed. The City must inform its customers of details regarding unresolved significant deficiencies including: the dates EGLE identified the significant deficiencies, the EGLE approved plan and schedule for corrective action, and progress toward the approved plan. The special notice requirement shall be included in all future consumer confidence reports until the significant deficiencies have been resolved.

If you have any questions, please feel free to contact Emily Wright at 231-942-2868 or WrightE4@Michigan.gov; or Donal Brady at 231-942-1386 or BradyD6@Michigan.gov.

Sincerely,

Donal Brady, P.E.
Field Operations Section
Drinking Water and Environmental Health Division

Enclosures

cc/enc: Darold Harlan, F&V Operations (via email)
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