



NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION

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NJDEP OVERSIGHT REPORT
TRENTON WATER WORKS
Period: July 2023

Trenton Water Works is a community water system that provides drinking water to 200,000+ people in the City of Trenton and portions of neighboring Mercer County municipalities (Ewing, Hamilton, Hopewell, Lawrence). Due to state Safe Drinking Water Act (N.J.S.A. 58:12A) compliance concerns, the New Jersey Department of Environmental Protection (Department) issued a Unilateral Administrative Order (UAO) on October 12, 2022, to initiate direct operational oversight of Trenton Water Works (TWW). While under the Department's direct operational oversight, TWW remains responsible for managing the daily operations of the water system. To facilitate on-the-ground oversight of TWW's operations and enhance TWW's technical and managerial capacity, the Department appointed a third-party oversight contractor (TPO) that works routinely with TWW staff and reports directly to the Department.

This report is intended to summarize oversight findings and actions during the month of July 2023.

Summary of July 2023 Findings and Immediate-Term Actions

In July, the focus was on *Legionella* mitigation in the distribution system through the low velocity flushing program. *Legionella* thrives in warmer water and action was needed as the temperature increased throughout the month and chlorine residual levels dropped. Compounding challenges during the month of July, TWW's Chief Engineer abruptly departed from the utility. The Department worked to assist the Acting Chief Engineer in addressing critical projects such as the Pennington Reservoir Replacement Plan and the failure of the Reservoir check-valve. The Department also continued to monitor and document concerns with operation and maintenance at the treatment plant due to continuing incidents with the chemical feed systems. A summary of findings and steps in each of these areas follows below.

1) Treatment Plant Operation and Maintenance

While severe storm events in the Trenton area elevated turbidity to high levels in the Delaware River, TWW did not experience any disruptions to treatment processes. In the past, an event that caused the river to spike to such high levels would trigger a plant shutdown to prevent any upsets. Due to improvements at the treatment plant, the treatment plant can better withstand these storm events to produce water that meets the federal and state drinking water standards. However, in July the Department continued to see a pattern of chemical feed incidents that impacted water turbidity levels.

Chemical Feed Incidents

While the June 2023 chemical feed incidents were attributed to the TWW operator's reaction time and responsive actions, an incident regarding the ferric feed pumps in July highlighted the inadequate preventative maintenance program. Not providing required preventative maintenance to pumps, chemical feed lines, or other critical treatment components can cause continuous failures of the asset. In July, a chemical feed line on one of the ferric pumps ruptured (see figure 1



Figure 1: A ferric pump covered in the chemical following a ruptured feed line.

below) and caused a reduction in feed rate. This, in turn, impacted the performance of the Superpulsator Clarifier® units (units), resulting in an increase in the amount of solids in the water leaving the units. Inadequate removal of solids can contribute to the formation of disinfection-by-products throughout the TWW distribution system, raise chlorine demand, increased the risk to the public from waterborne pathogens such as *Cryptosporidium*, *Giardia lamblia*, viruses, and *Legionella*.

The June and July 2023 chemical feed incidents shed light on TWW's lack of preventative and ongoing maintenance as well as the need for improved protocols and staff training to respond to such incidents. TWW responded by scheduling training for all maintenance staff with the pump manufacturer to ensure they have the proper knowledge of how to conduct preventive maintenance on these assets. The Department also responded by requiring the TPO's water utility maintenance expert to return to TWW to evaluate operation and maintenance protocols.

2) Distribution System Activities

The low-velocity flushing program continued throughout July as part of the overall *Legionella* mitigation plan for the TWW system. TWW continued sampling at flushing and non-flushing locations throughout the system to trend chlorine residual over time. As temperatures continued to increase throughout July, the chlorine residual decreased, most notably at distal ends of the distribution system.

Based on these results, the Department requested that TWW further increase the chlorine dosage leaving the two points of entry to maintain the target chlorine residual of 1.0 mg/L in the distribution system. During July, there was a continued transition of the low velocity flushing program to TWW. TWW staff are now responsible for analyzing sampling results in the system and determining sample site selections for each day. The Department reduced meetings with TWW on the LVF program from twice daily to once a week. Sampling results continue to be trended by TWW and reported to the Department to help determine next steps for the program.

In the month of July, there was one Legionnaires' Disease case reported in the TWW distribution system, which is the first reported case since low-velocity flushing began. However, additional sampling occurred at the home of the reported Legionnaires' Disease case. The incoming cold water was negative for *Legionella*, suggesting that the case was not associated with the water system.

Hydrant inspections in the distribution system began in July. TWW started in West Trenton through the month of July and are progressing to East, South, and North Trenton next.

3) Pennington Reservoir Replacement Plan

The demolition of 942 Prospect Street, the location for Phase 1 of the project, is nearing completion. Phase 1 consists of two eight-million-gallon storage tanks on the property. The remaining items needed for the preparation of the site prior to construction activities are to level the ground with approved fill material and fence off the property.

NEXT STEPS

While the Department would like to shift the focus away from triaging incidents at the treatment plant and have the TPO focus on making sustainable improvements, that did not occur in July due to continued operational and maintenance challenges. The Department requested that the TPO review and identify any required SOP updates based on recent incidents to ensure staff are knowledgeable on protocols and procedures. The low-velocity flushing program will continue through the summer months, however, the Department will be looking to shift full responsibility of the oversight and planning of the program to TWW. The Department will continue to meet with TWW to ensure proper actions are taken, but TWW will be controlling the program's progress.