



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

OFFICE OF THE COMMISSIONER

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IN THE MATTER OF	:	SUPPLEMENTAL UNILATERAL
	:	ADMINISTRATIVE ORDER PURSUANT TO
CITY OF TRENTON	:	NEW JERSEY SAFE DRINKING WATER
TRENTON WATER WORKS	:	ACT (N.J.S.A. 58:12A-6)
	:	

AUTHORITY

1. This Order is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection ("Department") by N.J.S.A. 13:1D-1, et seq., the New Jersey Safe Drinking Water Act ("SDWA"), N.J.S.A. 58:12A-1, et seq., and attendant regulations at N.J.A.C. 7:10-1, et seq., the federal Safe Drinking Water Act, 42 U.S.C. §300f, et seq., and the National Primary Drinking Water Regulations at 40 C.F.R. §141, et seq., over which the Department has assumed primary enforcement responsibility pursuant to N.J.S.A. 58:12A-2, the New Jersey Water Supply and Wastewater Operators' Licensing Act, N.J.S.A. 58:11-64, et seq., and attendant regulations at N.J.A.C. 7:10A-1, et seq., and the Water Supply Management Act, N.J.S.A. 58:1A-1, et seq., and attendant regulations at N.J.A.C. 7:19-1, et seq.
2. The Commissioner may issue an order under N.J.S.A. 58:12A-6 when a contaminant that is present in or is likely to enter a public water system may present an imminent and substantial endangerment to the health of persons.

FINDINGS

3. The City of Trenton ("City") and Trenton Water Works ("TWW"), a self-financing department of the City, own and operate a public water system ("System"), as defined by N.J.A.C. 7:10-1.3, which has the Public Water System Identification Number 1111001 and is located in the City of Trenton, New Jersey. Collectively, the City and TWW are the Respondents.
4. As a public water system, the System is subject to the New Jersey Safe Drinking Water Act and its implementing regulations. N.J.A.C. 7:10-5.1.
5. New Jersey has incorporated by reference the National Primary Drinking Water Regulations at 40 C.F.R. §141. N.J.A.C. 7:10-5.1.

6. The City and TWW are “persons” as that term is defined in N.J.A.C. 7:10-1.3.
7. The System provides water to more than 200,000 people in Trenton, as well as portions of four surrounding municipalities: Ewing, Hamilton, Hopewell, and Lawrence.
8. The System is a surface water system that draws from an intake on the Delaware River in Trenton, New Jersey and is subject to the requirements of the federal Surface Water Treatment Rules, 40 C.F.R. § 141.70, et seq.
9. On October 12, 2022, the Department issued a Unilateral Administrative Order (“October 2022 UAO”) to Respondents with detailed Findings regarding TWW’s failure to properly operate and maintain the System, its failure to cover or adequately treat its uncovered reservoir, the potential for *Legionella* risks within its System, the potential for lead risks within its System, and its failure to advance capital improvements. The October 2022 UAO ordered Respondents to, *inter alia*, facilitate the direct oversight and monitoring of the System by the Department and its consultants. On October 13, 2022, the Respondents informed the Department of their intent to comply with the October 2022 UAO. The October 2022 UAO remains in effect and is fully incorporated herein by reference.

DIRECT OVERSIGHT OF THE SYSTEM

10. Under the authority of the October 2022 UAO, a third-party oversight contractor (“TPO”) hired by the Department initiated a weekly onsite presence at TWW in November 2022 to evaluate baseline System conditions and identify immediate needs to avoid a catastrophic failure or a situation impacting the quality of drinking water being delivered to the public. The TPO retained several technical experts to address the critical needs of the System and to prepare plans for implementation and long term maintenance of changes to the System. The Department and the TPO meet at least weekly with representatives from TWW to discuss immediate needs in four key areas of focus: 1) Treatment plant; 2) Laboratory; 3) Distribution system; and 4) Capital Improvements/Pennington Reservoir Replacement Plan.
11. Beginning on November 16, 2022, representatives of the Department performed regular site visits to evaluate ongoing operations at the System. Since that date, the Department conducts site visits at least weekly.
12. The Department’s initial focus was to address those critical immediate items that had the greatest potential to impact drinking water quality and public health. Such critical items included addressing the failing Superpulsator units, which are used to remove the majority of particulate matter (i.e. sediments, organic matter, etc.) from the water, and implementing steps to address the risk of *Legionella* throughout the TWW distribution system. The Department consistently communicated with TWW the priority actions necessary to address the imminent failure risks. Under the Department’s direct oversight, the failing Superpulsator units have since returned to operational status; however, it took TWW over a year from the start of direct oversight to complete repairs due to the pre-existing extensive damage to the units. Other key areas of the Department’s focus include an evaluation of data integrity and the Pennington Reservoir Replacement Plan, which is intended to address the health risks from the uncovered finished water reservoir.



13. Despite the Department's ongoing direct oversight and specific direction as outlined above, the following critical deficiencies persist: 1) system operations and maintenance failures, including inadequate professional staffing, failure to properly maintain critical treatment unit processes, data integrity issues, and monitoring and reporting violations; 2) failure to cover or adequately treat the uncovered reservoir; 3) failure to address *Legionella* risks; 3) failure to maintain the distribution system; and 4) continuing potential lead risks. Taken as a whole, these items are reflective of Respondents' failure to invest in required maintenance and capital expenditures without ongoing assistance from the Department.
14. Based on the facts and circumstances enumerated in the following paragraphs, the Department has determined that conditions continue to exist at the System that may present an imminent and substantial endangerment to the health of persons, and that this Supplemental Unilateral Administrative Order ("Supplemental Order") is necessary to protect public health.

SYSTEM OPERATIONS AND MAINTENANCE FAILURES

A. Inadequate Professional Staffing

15. The Department has repeatedly notified the Respondents that the System's operations lack trained professional staff in several key positions, including the lack of qualified licensed personnel in critical positions in operations management and the treatment plant.
16. Under the October 2022 UAO and through its direct oversight, the Department has highlighted the continued need for the Respondents to hire or train additional licensed operators to fill the professional staffing gaps at the System. TWW, however, has failed to obtain additional licensed professionals to fill existing key vacancies. This ongoing issue continues to pose concerns about the lack of these critical positions on the operations of TWW's treatment plant and distribution system.
17. TWW has failed to establish a formalized staff training program. Department requests for staff training materials for an apprenticeship program for new licensed operators have been met with limited information from TWW.
18. Through its direct oversight, the Department has instructed TWW to prioritize filling other critical staffing vacancies that directly impact operations at the water utility, including additional laboratory staff and a Maintenance Supervisor to ensure proper operation and maintenance of the treatment plant unit processes. TWW is required to allow internal City of Trenton employees to have the opportunity to apply for positions ahead of external individuals, which can result in the hiring of staff who lack the requisite experience. Many of these critical positions remain unfilled.
19. The TPO's licensed operator worked with the Department and TWW staff to establish and evaluate written standard operating procedures (SOPs) for critical job functions. The TPO and Department concluded that SOPs are missing in some instances. Where SOPs do exist, TWW staff have regularly failed to follow the existing written procedures. In addition, TWW does not maintain a complete record cataloguing existing SOPs.
20. Through the Department's weekly walkthroughs, the Department observed that there continues to be a lack of consistent oversight by TWW of its staff, which has resulted in operation and maintenance and treatment failures, as set forth below in further detail.



B. Operation and Maintenance and Treatment Failures

21. Since Direct Oversight was initiated in 2022, the Department and the TPO have observed repetitive chemical feed failures that have resulted in disruptions at TWW's treatment plant and Central Pump Station. This includes failures of the potassium permanganate chemical feed system on November 27, 2022, April 3, 2023, and June 19, 2023; failure of the sludge blanket polymer feed on April 10, 2023; failure of the sodium hypochlorite feed pump at the Central Pump Station on December 14, 2022; failure of the lime feed systems on August 7, 2024; and failures of the ferric chloride feed system on June 17, 2023, and July 13, 2023.
22. These repeated incidents demonstrate a pattern of operation and maintenance failures caused by the lack of an established preventative maintenance program and inadequate training of staff to promptly identify a problem and take timely corrective action. It also highlights the Respondents' failure to determine the root cause of an issue, as well as the insufficient storage and inventory control of chemicals or spare parts.
23. TWW does not routinely utilize the eMaint software system to track required maintenance work. This system is used to create work orders, report issues, track required maintenance, create a spare parts inventory, and provide asset management. This leaves the System reactive in its maintenance practices.
24. For instance, on August 22, 2023, the TPO licensed operator found that TWW staff had cut back the polymer feed rate due to a low inventory of sludge blanket polymer at the treatment plant. The sludge blanket polymer is paramount for the proper formation of a sludge blanket within the Superpulsator units that remove sediments, organic matter, and other constituents from the water. Failing to remove these particles adequately can contribute to the increase in chlorine demand and then the formation of elevated disinfection-by-products throughout the TWW distribution system, elevate filtered turbidity to levels above drinking water regulations, and lead to the presence of waterborne pathogens, such as *Cryptosporidium*, *Giardia lamblia*, viruses, and *Legionella* in the water.
25. Under the requirements of N.J.A.C. 7:10-11.12(a)(7), each treatment plant shall have a minimum 30-day storage capacity for chemicals based upon the expected monthly use of chemicals by the treatment plant. If chemicals are delivered to the treatment plant in bulk deliveries, the tank capacity shall be a minimum of 120 percent of the bulk delivery volume. Given this requirement, TWW should have maintained adequate supply of sludge blanket polymer.
26. The Department performs weekly site visits to the TWW treatment plant, which include walkthroughs to identify potential issues and areas of concern. Frequently, the Department has observed issues that the TWW had failed to identify independently. This highlights the lack of written procedures and the inability of TWW staff to follow checklists to perform critical job functions. Examples include, but are not limited to, the Department's observation of a Superpulsator unit not pulsing to regularly remove sludge on February 7, 2024, a pump leaking polymer chemicals on June 18, 2024, and water leaking from the roof of an electrical room on September 10, 2024.



27. On November 16, 2023, the Department observed a layer of sludge covering the surface of the Superpulsator units, indicating TWW's failure to follow protocols outlined by the TPO licensed operator to maintain the units in good condition. Sludge left on the surface of the Superpulsator unit's basin prevents visual observations of water quality and floc formation and could cause issues with the effluent water quality if the surface sludge layer becomes too thick. This is a basic maintenance process for TWW staff to regularly follow. The Department has continued to observe that the surface of the Superpulsator unit basin is covered in sludge indicating that TWW is not adhering to the routine maintenance schedule.
28. Superpulsator unit #4 has had a leaking gate valve that was identified when the unit was taken offline for routine cleaning in August 2023. Each Superpulsator unit has its own gate valve that controls the flow of water into the four separate units. The gate valve currently will not close all the way which allows a small amount of water from the mixing basins to enter the offline Superpulsator and sludge to slowly accumulate on the bottom. TWW has expressed that this would be a difficult repair, but the concern is this causing the Superpulsator to become inoperable in the future, again limiting TWW's ability to have redundant units ready to be brought online.
29. On January 4, 2024, the Department observed that the powdered activated carbon (PAC) was not being added to the water prior to the mixing basins. PAC is critical for aiding the coagulation and flocculation process by removing organic compounds and other particles from the water. PAC turns the water a dark black color, so a visual observation would have made it apparent to TWW staff during plant walkthroughs that PAC was not feeding. The Department first brought this to TWW's attention. TWW staff had not previously been aware of this failure, which indicates either a staff failure to perform routine walkthroughs or a lack required operational knowledge to timely identify this issue.
30. The Department has observed and documented many instances of potassium permanganate on the floor of the potassium permanganate injection room. TWW is aware of the frequent clogging of this line and works to flush the line and return the system to normal operation whenever an issue with the treatment unit occurs. However, a solution to reduce clogging and allow continuous operation is necessary, which TWW has not yet identified.
31. TWW feeds zinc orthophosphate (ZOP) into the gravity zone distribution system to address historical lead and copper issues. The ZOP feed was halted in two separate instances in July 2022 and April 2023 due to check valve failures of two different designs resulting in ZOP entering the reservoir. The absence of ZOP treatment posed a concern as ZOP is necessary to reduce the risk of lead leaching from lead service lines within the gravity zone of TWW's distribution system. ZOP continued to be dosed from the Central Pump Station for corrosion control in the high service area of the distribution system.
32. A new design check valve was ordered by TWW in the spring of 2023, but in May 2024, the manufacturer informed TWW that the requested valve was not available. Thus, TWW went with an alternative type of check valve, a "double door check valve", that has a design appropriate for the application. This created an additional setback to an already extended and delayed project. On June 27, 2024, the double-door check valve was installed and tested to confirm its function. The testing was satisfactory, and the valve was subsequently put online. To date, there has been no documented issue with the new check valve. Between the uncovered reservoir remaining in existence and the multiple issues with the check valve, TWW has been unable to add ZOP to minimize potential lead and copper



release in the gravity zone distribution system. The absence of ZOP treatment as outlined above will extend the timeframe in which corrosion control treatment will not be optimized.

33. TWW's raw water pumps lack redundancy and have experienced several failures, resulting in forced plant shutdowns. Raw water pump #2 was offline for several months in late 2023 into 2024, and on July 14, 2024, raw water pumps #1 and #3 experienced restricted flow due to suspected clogging.
34. There have been two recent instances when the Department observed water leaks in electrical rooms of the plant. The first instance was on August 6, 2024 in the Superpulsator electrical room, and the second was on September 10, 2024 in the second floor electrical room. At the time, TWW was not aware of either incident until the Department brought it to their attention to address. TWW determined the first instance was attributed to the HVAC system above the Superpulsator electrical room, and the second instance was attributed to the poor condition of the roof, which allowed water infiltration. These electrical rooms hold critical infrastructure for plant operations, and these leaks present a significant hazard and risk that could result in a plant shutdown or other catastrophic incident.
35. As a surface water system, TWW is required to use a continuous turbidity monitoring device on each individual filter and on the combined filter effluents prior to leaving the treatment plant pursuant to N.J.A.C. 7:10-11.14(a). These continuous monitoring devices are utilized to ensure the turbidity levels meet requirements of the federal Surface Water Treatment Rules to protect public health.
36. TWW uses approximately thirty-five (35) Hach 1720E turbidimeters to continuously monitor turbidity levels throughout the plant, including on the individual filters and combined filter effluent. These meters have been discontinued by the manufacturer and are no longer producing replacement parts. When a meter fails, and TWW runs out of inventory for replacement parts, they will inevitably have to be replaced. Failure of any of these units would hinder TWW's ability to monitor turbidity levels in the treatment plant and ensure water being delivered meets standards.

C. Data Integrity Issues and Monitoring and Reporting Violations

37. Under the October 2022 UAO and at the Department's direction, the TPO has continually audited TWW's laboratory to assess laboratory processes and their reliability. The TPO water quality expert has conducted at least twelve (12) separate site visits and eighteen (18) virtual meetings with laboratory staff to evaluate the certified laboratory between December 2022 and April 2024 with additional follow-up in the interim.
38. The TPO has documented through compliance checklists during these site visits that TWW's laboratory is failing proficiency testing for multiple parameters they are certified to analyze.
39. On October 24, 2023, the Department notified TWW in writing that they were required to implement and follow recommended actions based on the assessments conducted by TPO consultant. The recommended actions included steps to ensure data integrity, improve laboratory efficiency and productivity, and maintain compliance with rules and regulations.



40. TWW does not currently employ a compliance officer or a Quality Assurance Specialist to oversee the laboratory. Currently, these functions are overseen by the Chief Chemist, who is serving in dual roles as a back-up operator for the treatment plant which has lead to serious data integrity issues at TWW.
41. On November 14, 2023, the Department became aware of allegations that TWW laboratory personnel were mishandling compliance samples and falsifying documents. Due to the seriousness of these allegations, the Department repeatedly requested that TWW submit a comprehensive corrective action plan to investigate the incident as well as address the measures taken to ensure that a similar incident does not recur. To date, TWW has failed to submit an adequate corrective action plan or supporting information regarding the incident.
42. After becoming aware of the above allegations, the Department requested that TWW provide evidence that its sample collection was conducted in accordance with State regulations and best practices. After several months, TWW provided the Department with an incomplete data set regarding its required distribution sampling. Using this information, the Department conducted an investigation of the veracity of TWW's required distribution system sample monitoring and invalidated 1,660 sampling events.
43. Based on the Department's investigation, the Department found that the Respondents are in violation of various federal and state regulations, including failures to monitor and report on system conditions, which can compromise the ability of TWW to determine the risk of negative health effects from bacteriological and other contaminants.
44. On August 22, 2024, the Department issued a Notice of Violation to TWW pursuant to the New Jersey Safe Drinking Water Act, N.J.S.A. 58:12A-1, et seq., and the New Jersey Safe Drinking Water Act Regulations, N.J.A.C. 7:10-1, et seq., for multiple monitoring and reporting violations resulting from the invalidated sampling events.
45. In the Notice of Violation, the Department informed TWW of its failure to collect at least 90% of the required samples measuring the disinfectant residual levels in the distribution system for thirteen monthly monitoring periods spanning from November 1, 2022 to November 30, 2023. In addition, the Notice of Violation identified that TWW had failed to monitor for disinfection byproducts during the five monitoring periods between October 1, 2022 and December 31, 2023; failed to collect samples measuring disinfectant residual levels for the 13 monitoring periods from November 1, 2022 through November 30, 2023; failed to monitor for total coliforms during the thirteen monitoring periods from November 1, 2022 through November 30, 2023; failed to monitor for water quality parameters for the two monitoring periods spanning from January 1, 2023 through December 31, 2023; and failed to monitor iron and/or manganese from the distribution system for monitoring periods spanning from January 1, 2023 to December 31, 2023.
46. On September 30, 2024, the Department issued an Administrative Order and Notice of Civil Administrative Penalty Assessment ("AONOCAPA") to TWW citing the same violations noted in the August 22, 2024, Notice of Violation. The AONOCAPA requires TWW to comply with all aspects of the New Jersey Safe Drinking Water Act, the Safe Drinking Water Act rules, and the National Primary Drinking Water Regulations. Moreover, the AONOCAPA requires TWW to submit a Remedial Action Plan to the Department, distribute a Tier 2 public notification regarding this incident to its customers, and assesses a civil administrative penalty of \$235,000 against TWW.



CONTINUING FAILURE TO COVER OR ADEQUATELY TREAT UNCOVERED RESERVOIR

47. The Pennington Reservoir is an uncovered finished water reservoir which contains millions of gallons of treated water and serves as a daily source of water to TWW's Central Pumping Station ("CPS"). The CPS in turn pumps the finished water to over 70% of TWW's customer base. Pursuant to the National Primary Drinking Water Regulations, specifically 40 C.F.R. § 141.714, Respondents are required to "be in compliance with a State-approved schedule" to "cover" Pennington Reservoir. Covering the reservoir may include: a physical cover, a replacement storage system, or adequate treatment to address pathogen risks.
48. On February 5, 2018, the Department and TWW entered into an Administrative Consent Order ("ACO") that addressed TWW's inadequate operations of the System, TWW's inadequate emergency response plan, TWW's inadequate staffing and TWW's inadequate use of the uncovered Pennington Reservoir. Pursuant to paragraph 17.M of the ACO, TWW was required to have Pennington Reservoir cleaned, repaired, covered, commissioned and tested and the entire project completed by July 31, 2023. TWW has failed to complete this project as of the date of this Supplemental Order.
49. Paragraph seventeen (17) of the February 5, 2018, ACO provided several interim deadlines for the reservoir covering project leading up to the final July 31, 2023 completion date.
50. Throughout 2018, TWW was required to establish a point of contact, complete upgrades to their SCADA system, complete evaluations of the Delaware River Intake, submit a draft Emergency Action Plan and complete construction of a new disinfection system at the reservoir Gatehouse – all in anticipation of taking the Pennington Reservoir offline during installation of the cover. TWW substantially, but not completely, complied with the 2018 interim deadlines.
51. In 2019, TWW informed the Department that instead of completing the reservoir cover project, it intended to construct a series of above-ground storage tanks to completely replace the Pennington Reservoir. As such, the Department sought from TWW a comprehensive tank proposal, including funding sources for land acquisition, tank construction, system resiliency related to tank construction, and a schedule for reservoir protection and for ceasing use of the reservoir, including interim deadlines to ensure completion by July 31, 2023, the project deadline established in the February 5, 2018, ACO.
52. The Respondents submitted a June 10, 2021, Pennington Reservoir Project Plan (PRRP), in which they proposed to construct a series of above-ground storage tanks as an alternative to installation of a reservoir cover. But the Respondents have not obtained either formal Department approval or adequate funding because of the former Trenton City Council's recurrent failure to approve critical and necessary funding.
53. The June 10, 2021 PRRP established a June 2023 deadline to decommission the Reservoir based on the proposed plan to replace the reservoir with storage tanks in a two-phase project. Phase 1 included the construction of two (2) 8 million-gallon (MG) storage tanks in the gravity zone area adjacent to the existing reservoir. Phase 2 included the planned construction of tanks in the high service gradient, which makes up 70% of TWW's total system demand.



54. On September 1, 2021, the Department sent a letter to TWW expressing concerns about the PRRP. Specifically, the Department noted that, without the construction of the Phase 2 tanks in the high service gradient, TWW would be unable to maintain a sustained supply once the reservoir is taken offline in accordance with N.J.A.C. 7:19-6.7. The letter also required submittal of a proposal for construction of the Phase 2 tanks by February 2022.
55. TWW failed to submit a proposal for construction of the Phase 2 tanks as outlined in the Department's September 2021 letter. This letter acknowledged that the Phase 1 tanks were not enough to take the reservoir offline so the Department also required TWW provide a plan to address system vulnerability and resiliency concerns as well as a detailed plan for the Phase 2 tanks. Consequently, in April 2022, the Department sent a follow-up letter to TWW to request a response to the September 2021 letter based upon the Department's review of the PRRP.
56. On January 19, 2023, the Department received an updated PRRP dated August 9, 2022 that included an updated schedule that placed the anticipated reservoir decommissioning in July 2026 -- three years after the June 2023 deadline established in the original 2021 PRRP.
57. In April 2023, TWW confirmed to the Department in writing that they were moving forward with plans for a decentralized storage tank project as outlined in the 2022 PRRP. TWW had previously expressed to the Department that they were still considering the feasibility of a physical reservoir covering project.
58. In May 2023, TWW submitted Phase 2 of the PRRP, which includes additional covered storage tanks in the high service area of the distribution system, upgrades to CPS, and offsite distribution system improvements around the reservoir. In the Phase 2 PRRP submittal, TWW identified a site in Hamilton Township and a second site in Ewing Township to construct storage in the high service area, which is required to maintain pressure and supply once the reservoir is decommissioned.
59. Since August 2023, there have been multiple setbacks which will result in a significant delay in decommissioning of the reservoir. Currently, TWW does not have a projected completion date for the PRRP project.
60. For example, the construction of the Phase 1 tanks located on the 942 Prospect Street Property was delayed based on the former City's Council's initial refusal to approve the contract for the demolition contractor.
61. Since then, TWW has completed demolition of the 942 Prospect Street Property and begun site preparations for two (2) 8-million-gallon concrete above-ground storage tanks that will be located on this property and completed as part of Phase 1 of the project. In September 2023, TWW also received a Permit to Construct the two tanks from the Department's Bureau of Water System Engineering. While the site has been demolished, construction is delayed because TWW had to revise their contract documents to include additional necessary site preparation and hydraulic modeling. The hydraulic model has since been completed, so a finalized contract and cost estimates will be submitted for approval to the City Council to begin construction.
62. Upgrades to the CPS, which is critical to serving the high service areas of TWW's distribution system (>70% of their customer base), are required prior to taking the reservoir offline. TWW's engineering consultant provided TWW with a preliminary design for the CPS upgrades, but the consultant raised



concerns regarding the station's longevity, based on its condition versus the cost and risk compared to a brand-new central pumping station. The consultant identified concerns with the condition of the critical suction and discharge piping in the basement, the limitation on the new pumps if the future demand of the system encroaches the maximum CPS capacity of 42 MGD, requirements to elevate the new pumps up to 6 feet above current grade to meet ANSI/HI standards, which would be done with concrete and would create structural concerns, and the need to construct a temporary pumping station while work is being done.

63. TWW's engineering consultant also suspects that there is internal corrosion of the piping in the CPS. TWW must conduct new tests to determine the remaining life expectancy of these pipes, which are almost 70 years old.
64. On August 27, 2024, TWW submitted a letter informing the Department that TWW will not be pursuing the option of rehabilitation of the existing CPS. Instead, TWW will construct a new pump station, chemical dosing system, and emergency power generator (as needed) at a location that has not yet been determined. TWW anticipates that the timeline for construction of a new pump station can be compressed in comparison to upgrades at the existing CPS. However, the time needed to evaluate site selection and move forward with a new CPS will impact the timeline to decommission the Pennington Reservoir.
65. The offsite distribution system improvements at the reservoir are delayed until a location for the new CPS is determined. These improvements were to connect the Phase 1 storage tanks with the existing CPS, but with a new CPS, the piping design will change and cannot be finalized until a preliminary design is completed.
66. Ultimately, the Department's approval of TWW replacement of the reservoir with covered storage tanks is contingent on multiple factors, including resiliency concerns at the water treatment plant. This includes new variable frequency drives (VFDs) for high lift pumps, main switchgear improvements, and rehabilitation of high service conduit. These improvements would help prevent unanticipated plant shutdowns in the future.
67. Due to the frequent power outages and disruptions attributed to electrical issues at the plant, the Department required TWW investigate the cause and develop a plan for how to resolve the issues. In response, TWW hired a consultant to complete an Electrical Power Reliability Study and provided a report to the Bureau on October 23, 2023. This report outlined several recommended corrective actions for TWW to take, which includes replacing high service pump VFDs, upgrade main 4.16 kV switchgears, and installation of a roll-up generator connection box. These upgrades must be completed prior to taking the Reservoir offline to ensure that TWW is capable of providing water without interruption.
68. In addition, the Department's consultant, Black and Veatch, identified additional electrical concerns that were not included in TWW's electrical upgrades plan that may need to be addressed. Some of the items flagged include assessing the condition of the pumps motor control centers and motors, and a potential need for new VFDs on all raw water pumps. The consultant's conclusion was that much of the plant's electrical infrastructure is nearing the end of its lifespan so replacing a single pump component (i.e. VFDs) would leave doubts about the pumps ability to run without issues and thus affecting plant reliability.



69. While there has been progress, the significant delays demonstrate that TWW does not have sufficient engineering staff to oversee the high volume of critical projects that will need to be addressed in the next few years to complete the PRRP project. Much of the progress thus far has resulted from the Department's project management and technical assistance. There is an additional need for both engineering and project management oversight to ensure these necessary capital improvements are made.

**FAILURE TO ADDRESS *LEGIONELLA* RISKS and
FAILURE TO MAINTAIN THE DISTRIBUTION SYSTEM**

70. The Respondents have failed to take action to correct the factors that may be contributing to *Legionella* growth within the TWW distribution system.
71. *Legionella* is a type of naturally occurring bacteria that can become a health concern, especially for the elderly and those with weakened immune systems. Legionnaires' disease is a severe form of pneumonia caused by breathing in droplets of water containing *Legionella* that can be fatal in some cases.
72. In August 2020, the NJ Department of Health (DOH) initiated an outbreak investigation into cases of Legionnaires' disease in Hamilton Township. This effort included the recruitment of 20 volunteers from Hamilton Township to have their homes tested for *Legionella*. The sampling results indicated that the occurrence of *Legionella* in Hamilton was greater than expected compared to state-wide baseline data.
73. The Department has been working with DOH to evaluate the potential link between the TWW distribution system based on a failure of TWW to properly operate and maintain the distribution system. Water utility deficiencies could lead to growth of *Legionella* and possible "overseeding" of *Legionella* during hydraulic events into buildings and homes. The Department has identified numerous factors that are likely to promote *Legionella* growth within the TWW distribution system.
74. Conditions conducive for *Legionella* growth in the TWW distribution system include high turbidity, increased sedimentation, increased nutrient availability, low chlorine residuals during warm weather months, stagnant water in the storage tanks, and no well-established flushing program.
75. TWW has historically failed to maintain major unit processes at the treatment plant that are responsible for sedimentation and organics removal. TWW has also delayed in completing pump-down mixing systems at several of the storage tanks within their service area. A pump-down mixing system was placed into service at the Mercerville Tank, but TWW was delayed in completing the design of a similar system at the Lawrence tank. The pump-down mixing system at the Lawrence tank was permitted on March 4, 2024 but has not yet been installed.
76. Additionally, tuberculation (i.e., the development of small mounds of corrosion products) in pipes from corrosive water or leaching of pipe material such as lead could allow for increased biofilm formation and provide opportunities for *Legionella* to harbor from disinfection. Most of the aging water mains in the TWW distribution system are made of cast iron, which is susceptible to corrosion and can promote *Legionella* growth.



77. In April 2023, at the Department's direction and under guidance from the U.S. Environmental Protection Agency, TWW began a low velocity flushing program to address *Legionella* growth in the distribution system. Through its direct oversight, the Department provided weekly onsite assistance for over 75 weeks to continue proper implementation of this program including flushing and sampling at identified locations. To continue to address the increased risk of *Legionella* in the TWW distribution system, TWW must establish a program including continued sampling, determination of additional flushing locations, optimization of flushing, and evaluation of automatic flushers. This program will be a regular part of distribution system maintenance, which needs to be managed.
78. Under the Water Quality Accountability Act (WQAA), N.J.S.A. C.58:31-3, public community water systems with more than 500 service connections must routinely conduct inspections and tests of certain distribution system assets. As TWW is subject to the requirements of the WQAA, it must have an inspection program which inspects all valves on a frequency based on their size, tests and flushes all hydrants and dead ends of water mains annually, and obtain geographic location of these assets using a satellite-based global positioning system. These inspections may be included as part of a flushing program which must also be developed by the System.
79. The Department has requested records of routine flushing, preventative maintenance tasks, and routine inspections of the distribution system. To date, TWW has been unable to produce comprehensive records verifying completion distribution system operation and maintenance as required under WQAA, which may impact the water quality of the system.
80. TWW also informed the Department that hydrants were flushed near disinfectant byproduct (DBP) sample locations prior to the required quarterly testing, which is a violation of 40 CFR 141.132(b)(1)(i). Flushing the distribution system, in the area of a DBP sampling location two weeks prior to a sampling event, creates conditions that are not representative of maximum residence time or the water quality of the entire distribution system.
81. TWW has numerous dead end water mains within their distribution system, which can contribute to stagnant water conducive to *Legionella* growth and poor water quality within the distribution system. TWW began a project to install manual dead end flushing devices at these dead ends. The Department raised concerns with the locations for these flushers (e.g. being installed in the middle of the road rather than at the curb), which will limit accessibility and use of these flushers. TWW also installed flushing devices at locations where a different action, looping of water mains, would be more successful. The Department will require TWW to obtain a contract to loop water mains at these locations. The Department has asked for an operational and maintenance plan for dead end flushers, which to date, TWW has not submitted.
82. TWW does not have an established comprehensive system wide flushing plan. In order to properly address certain water quality concerns, such as *Legionella*, TWW needs a unidirectional flushing plan. This plan must be designed and sequenced using hydraulic modeling, which can be an extensive effort. TWW does not have the flushing expertise in house to design and implement this flushing.



CONTINUING POTENTIAL LEAD RISKS

83. Pursuant to N.J.S.A. 58:12A-40, et seq., effective July 22, 2021, all community water systems must replace all lead service lines within their system by July 22, 2031, at an average annual replacement rate of ten percent. The law includes galvanized lines as lead service lines, which were not required to be replaced under the federal Lead and Copper Rule.
84. Based on the System's current lead service line inventory, 16,182 of lead service lines, serving consumers within the System's service area, remain. In addition, the system has 26,503 service lines of unknown material that must be evaluated and replaced if they are found to contain lead.
85. Despite ongoing lead service line replacement obligations and the considerable subsidies available from the Department, the former City Council refused to authorize the bonds necessary to finance additional phases of the lead service line replacement program. To that end, in State Fiscal Year 2022, the City failed to submit contracts for certification of additional phases of the lead service line replacement program, which would have been eligible for over \$18 million in principal forgiveness loans.
86. TWW is participating in the Lead Accelerator program with EPA and DEP to receive technical assistance with planning for the next two phases of the project. On June 20, 2024, TWW executed a short term loan in the amount of \$9,416,896 to replace approximately 1,000 service lines as part of Phase 4 of their Lead Service Line Replacement Project. This project qualified for \$4,661,830 in principal forgiveness under the term of the SFY2024 Intended Use Plan. In order to meet the funding deadlines, however, TWW required substantial direction through weekly meetings with representatives from the Department, EPA, the I-Bank, and EPA's consultant.
87. The slow progress demonstrates that without significant assistance from the Department and other agencies, TWW is not able to successfully execute a lead service line replacement plan at a pace that will comply with State deadlines. TWW has also repeatedly failed to address how the timing of other road projects, such as cleaning and line, should be coordinated with lead service line replacement efforts.
88. The Respondents' repeated, ongoing, and systemic failures to properly operate and maintain the System risks the ability to reliably produce safe drinking water that is in compliance with the federal and New Jersey Safe Drinking Water Acts. including recent operational and maintenance violations, creates conditions in which contaminants are likely to enter the System that may present an imminent and substantial endangerment to public health.

ORDER

Given the seriousness of the Respondents' continued noncompliance with the Safe Drinking Water Act and the resulting imminent and substantial endangerment to the health of persons, it is hereby ORDERED, pursuant to N.J.S.A. 58:12A-6, N.J.S.A. 58:12A-4(e), N.J.S.A. 58:12A-4(f), and N.J.S.A. 13:1D-9(d) that:

1. Respondents shall continue to facilitate the oversight and monitoring of the System, as ordered under the October 2022 UAO, by the Department and its consultants which shall include, but not



be limited to, overseeing and monitoring all System operations and making technical and regulatory compliance recommendations to bring the System into compliance with applicable law.

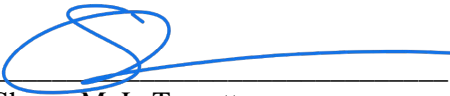
2. In addition, under this Supplemental Order, Respondents shall facilitate and comply with the Department's provision of direct contract operations through a third-party consultant ("Contract Operations Consultant") to provide immediate managerial and staff capacity to oversee TWW's treatment plant, distribution system, regular maintenance, laboratory, and other operations. The Respondents shall facilitate and comply with the Contract Operations Consultant's managerial oversight of operation, maintenance, and procurement required for water system operation for the provision of potable water in compliance with the SDWA.
3. Respondents shall incorporate the Contract Operations Consultant into the System's operations such that the consultant can provide an immediate capacity building force to address the above-described deficiencies with the System and allow the consultant to take any actions necessary to facilitate TWW's operation of the treatment plant to ensure the provision of potable drinking water, including by providing consultant personnel to fill staffing vacancies and to provide additional technical expertise.
4. Respondents shall also facilitate and comply with the Department's provision of engineering services for the System through an Engineering Program Manager to provide additional capacity and advice to the engineering unit of TWW, facilitate management of TWW's current capital improvement program, assist with the development of robust operating procedures, and provide mentoring and assessment of TWW engineering managers and staff.
5. The Respondents shall facilitate and comply with the Department's provision of a Training Program Manager to provide for the development and implementation of a staff training plan and supporting materials, standard operating procedures, and assessment of TWW staff and management.
6. Nothing herein limits or removes the Respondents' responsibility to operate the water system in compliance with all applicable laws.
7. Respondents shall continue to provide the Department and its consultants full physical access to the System, as well as access to records and personnel.
8. Respondents shall comply with all orders issued by the Department pursuant to its authority under the SDWA necessary to make appropriate alterations to the System and its operations and maintenance.
9. Respondents shall reimburse the Department for costs directly and reasonably incurred, including consultant costs, to effectuate this Order.
10. This Order shall be effective upon its receipt by any official associated with Respondent.
11. Within twenty-four hours of receipt of this Order, Respondents shall notify the Department of their intent to comply. Notification by e-mail to the Department point of contact identified below is acceptable.



GENERAL PROVISIONS

12. Any notices required by this Order to be submitted to the Department shall be submitted to the following address.
- Kimberly Cahall, Chief Enforcement Officer
New Jersey Department of Environmental Protection
401 East State Street, Trenton, New Jersey 08625
kimberly.cahall@dep.nj.gov
13. This Order does not relieve the Respondents from the obligation to comply with any applicable federal state, or local law.
14. The Department may amend or modify this Order or issue additional orders if, in its judgement, any such amendment or modification is necessary to protect human health or the environment.
15. The Department reserves all statutory and common law rights to require the Respondents to take additional actions(s) if the Department determines that such actions are necessary to protect public health, safety, welfare, and the environment. Nothing in this Order shall constitute a waiver of any statutory or common law right of the Department to require such additional measures should the Department determine that such measures are necessary.
16. Pursuant to section 1447(a) of the federal Safe Drinking Water Act, Respondents are subject to and shall comply with all federal, state, interstate, and local requirements, both substantive and procedural, respecting public water systems in the same manner and to the same extent as any person is subject to such requirements, including, but not limited to, administrative orders and all civil and administrative penalties and fines. 42 U.S.C. § 300j-6(a).
17. Nothing in this Order is intended to trigger a default under section 5.01(d) of the City of Trenton's loan agreements with the Department and the I-Bank. 15. This Order constitutes a final agency action.
18. The Department may modify this Order. The Department will communicate any modification(s) to Respondents in writing and they shall be incorporated into this Order.
19. Notice is given that pursuant to N.J.S.A. 58:12A-10d, any person who violates the Safe Drinking Water Act, N.J.S.A. 58:12A-1, et seq., or an administrative order issued pursuant to N.J.S.A. 58:12A-10b, shall be subject upon order of the court, to a civil penalty not to exceed \$10,000 per day of the violation, and each day's continuance of the violations shall constitute a separate and distinct violation. Any penalty imposed pursuant to N.J.S.A. 58:12A-10d may be recovered with costs in Superior Court pursuant to N.J.S.A. 2A:58-1, et seq.

Dated: October 28, 2024


Shawn M. LaTourette
Commissioner

