



COMMONWEALTH of VIRGINIA

DEPARTMENT OF HEALTH

OFFICE OF DRINKING WATER

Richmond Field Office

Karen Shelton, MD
State Health Commissioner

Madison Building
109 Governor St., 6th Floor
Richmond, VA 23219
Phone: 804-864-7409

June 13, 2025

RVAMayor@rva.gov

The Honorable Danny Avula, Mayor, City of Richmond

Scott.Morris@rva.gov

Scott Morris, Director

Richmond Department of Public Utilities
900 E. Broad Street, Room 115
Richmond, Virginia 23219

RE: City of Richmond Waterworks
Public Water System Identification VA 4760100
Order by Consent – Effective June 26, 2025

Dear Mayor Avula and Director Morris:

Please find enclosed a copy of the Order by Consent (Order) that you entered into with the State Board of Health pursuant to Va. Code § 32.1-26 concerning City of Richmond Waterworks. The Order becomes effective on June 28, 2025, which is 15 days after mailing you a copy by certified mail. The Order sets forth a schedule of compliance to resolve ongoing violations of the Public Water Supplies law and the applicable regulations.

Thank you for your cooperation in this matter. If you have any questions, please contact me at Tanni.Sarker@vdh.virginia.gov or (804) 912-5708.

Sincerely,

Tanni Sarker, Ph.D.
Field Office Deputy Director
VDH-ODW Richmond Field Office

Enclosure: Copy of the Executed Order by Consent

cc: Dr. Elaine Perry, Health Director, Richmond Health District
Dr. Thomas Franck, Health Director, Chickahominy Health District
Dr. Alexander Samuel, Health Director, Chesterfield Health District



COMMONWEALTH of VIRGINIA

Karen Shelton, MD
State Health Commissioner

Department of Health
P O BOX 2448
RICHMOND, VA 23218

TTY 7-1-1 OR
1-800-828-1120

**STATE BOARD OF HEALTH
ORDER BY CONSENT
ISSUED TO THE
City of Richmond
FOR THE
City of Richmond Waterworks
PWSID No. VA4760100**

This is a Consent Order, issued under authority granted by Va. Code § 32.1-26, between the State Board of Health and the City of Richmond for the City of Richmond Waterworks to resolve certain violations of the Public Water Supplies Law and the applicable regulations.

Section A. Definitions

Unless the context clearly indicates otherwise, the following words and terms have the meaning assigned below:

1. "Board" means the State Board of Health, a permanent citizens' board of the Commonwealth of Virginia, as described in Va. Code § 32.1-15.
2. "City" means the City of Richmond.
3. "Commissioner" means the State Health Commissioner, who supervises and manages the Department, as described in Va. Code §§ 32.1-16 and 17.
4. "Community waterworks" means a waterworks that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.
5. "Department" or "VDH" means the Department of Health, an agency of the Commonwealth of Virginia, as described in Va. Code § 32.1-16.
6. "DPU" means the City of Richmond Department of Public Utilities.
7. "EPA" means the United States Environmental Protection Agency.

8. "Human consumption" means drinking, food preparation, dishwashing, bathing, showering, handwashing, teeth brushing, and maintaining oral hygiene, as defined in Va. Code § 32.1-167 and 12VAC5-590-10 of the Regulations.
9. "Notice of Alleged Violation" or "NOAV" means a type of notice of alleged violation issued under 12VAC5-590-110 of the Regulations.
10. "ODW" means the VDH Office of Drinking Water.
11. "Order" means this document, also known as a "Consent Order" or "Order by Consent," which the Board is authorized to issue to require any person to comply with the provisions of any law administered by it, the Commissioner or the Department or any regulations promulgated by the Board or to comply with any case decision, as defined in § 2.2-4001, of the Board or Commissioner.
12. "Permit" means Waterworks Operation Permit VA4760100.
13. "Public Water Supplies Law" or "PWSL" means Article 2, Chapter 6 of Title 32.1 of the Va. Code.
14. "Pure water" means water fit for human consumption that is (i) sanitary and normally free of minerals, organic substances, and toxic agents in excess of reasonable amounts and (ii) adequate in quantity and quality for the minimum health requirements of the persons served.
15. "PWSID" means Public Water System Identification.
16. "Regulations" means the Waterworks Regulations, 12VAC5-590-10, *et seq.*
17. "RFO" means the ODW Richmond Field Office located in Richmond, Virginia.
18. "Richmond Waterworks" means the City of Richmond Waterworks.
19. "Sanitary Survey" means the inspection of the Richmond Waterworks conducted by ODW on January 27, February 6, and February 18-20, 2025, pursuant to 12VAC5-590-350 of the Regulations, which included a detailed inspection of the WTP and the distribution system and the issuance of a Sanitary Survey Report to the City.
20. "SOP" means Standard Operating Procedure.
21. "Va. Code" means the Code of Virginia (1950), as amended.

22. "VAC" means the Virginia Administrative Code.
23. "Water Crisis" means the system-wide water pressure loss at the Richmond Waterworks, with the exception of zone 7A, that began on January 6, 2025, and that was followed by a boil water advisory that stayed in place until January 11, 2025.
24. "Waterworks" means a system that serves piped water for human consumption to at least 15 service connections or 25 or more individuals for at least 60 days out of the year. Waterworks includes all structures, equipment, and appurtenances used in storage, collection, purification, treatment, and distribution of pure water except the piping and fixtures inside the building where such water is delivered.
25. "WTP" means the water treatment plant that is part of the Richmond Waterworks.

Section B. Findings of Fact and Conclusions of Law

1. The City owns, and holds a permit to operate, the Richmond Waterworks (PWSID #4760100), a community waterworks located in Richmond, Virginia. The City is the "owner" of the Richmond Waterworks as defined by Va. Code § 32.1-167 and 12VAC5-590-10 of the Waterworks Regulations. The City holds a waterworks operation permit pursuant to 12VAC5-590-260 of the Regulations.
2. The Richmond Waterworks serves piped water to over 250,000 consumers and provides wholesale water to neighboring jurisdictions: Chesterfield, Goochland, Hanover, and Henrico counties. The Richmond Waterworks obtains raw water from the James River. The Richmond Waterworks utilizes conventional surface water treatment involving presedimentation, coagulation, flocculation, sedimentation, filtration, and chloramination. The WTP is comprised of two processing trains (Plant 1 and Plant 2), each capable of independent operation. The Richmond Waterworks is equipped with a SCADA system which allows treatment process control as well as distribution system monitoring/control.
3. The WTP has two main substation power supplies from Virginia Dominion Energy (Dominion). The WTP has two diesel back-up generators, Uninterrupted Power Supplies (UPSs), and employment of WTP operators, electricians, maintenance experts, instrumentation specialists, and others with specialized expertise to ensure the WTP can operate without interruption and effectively respond to needs, such as a power failure, in accordance with training and SOPs. The WTP was built in 1924 (Plant 1) and expanded in 1950 (Plant 2).

4. Comparable waterworks establish SOPs and provide task-specific training at the appropriate frequency to staff to ensure that employees have the knowledge and skills to quickly respond to an emergency such as a power outage. SOPs help new employees learn critical procedures quickly and accurately. A waterworks' operation and maintenance manual, asset management program, and emergency response plan ensure staff understand and can quickly respond to a power outage.

5. On January 6, 2025:

- a. The WTP was operating in "winter mode," meaning that of the two available main power feeds from Dominion, only the above-ground feed was being used to power the WTP.
- b. At approximately 4:25 a.m., there was a short power interruption at the WTP. Richmond Waterworks staff completed a critical equipment check.
- c. At approximately 5:45 a.m., the active power feed to the WTP lost power. The main automatic bus tie failed to transfer power to the alternate power feed.
- d. At approximately 5:50 a.m., Richmond Waterworks operators observed flooding in the filter galleries. They attempted to start a diesel engine-driven pump to dewater the basement of Plant 1 but could not successfully prime the pump. The flooding was due to filter valves remaining open.
- e. By approximately 5:55 a.m., Richmond Waterworks operators observed six feet of water in the underground filter galleries of both Plant 1, built in 1920, and Plant 2, an expansion of the WTP in 1950. Vital WTP equipment was located in the basement and was directly impacted by the flooding.
- f. At approximately 6:05 a.m., Richmond Waterworks operators successfully primed the diesel engine-driven Godwin pump to dewater Plant 2 and it began pumping water from the underground filter gallery. Meanwhile, an electrical specialist for the Richmond Waterworks arrived early for their shift at the WTP and worked to open the entrance gate to the WTP, unaware of the ongoing flooding issues. Approximately 10 minutes later, the electrical specialist began investigating the loss of power.
- g. At approximately 6:30 a.m., the Richmond Waterworks' electrical supervisor arrived at the WTP.
- h. At approximately 6:40 a.m., the electrical supervisor tried to close the bus tie but could not close it. The electrical supervisor continued working to restore power. Meanwhile, chest-high water was observed in the Plant 1 pump room.
- i. At approximately 7:00 a.m., the WTP superintendent requested Chesterfield County and Henrico County reduce their water demand. DPU did not adequately communicate the full extent of the flooding and likely long-term Water Crisis that was developing. DPU staff did not inform Hanover County because of a lack of contact information.

- j. At approximately 7:05 a.m., power was restored to the WTP after the Richmond Waterworks' electrical supervisor manually closed the main bus tie. The SCADA network contained communication errors and failed to resume normal function.
- k. At approximately 7:40 a.m., Richmond Waterworks operators began to close all filter influent valves manually to stop the forward flow and flooding.
- l. At approximately 8:00 a.m., WTP maintenance staff arrived onsite and staff worked to hook up four two-inch pumps to dewater the flooded basement.
- m. At approximately 8:11 a.m., the DPU Director notified Chesterfield County that power had been restored. The DPU Director did not clarify that the WTP was not operational despite the return of power. Chesterfield County reverted to its normal withdrawal of water. The next communication with Chesterfield County did not occur until 2:35 p.m.
- n. At approximately 8:20 a.m., the Richmond Waterworks' program and operations supervisor determined that not all filter influent valves were closed. Water levels began to recede once all the valves were closed.
- o. At approximately 8:30 a.m., Dominion restored the power feed that had failed.
- p. At approximately 8:45 a.m., the DPU Deputy Director arrived at the WTP.
- q. By approximately 2:30 p.m., Plant 2 was mostly dewatered down to the basement level. Richmond Waterworks staff began to dry motors, actuators, and other equipment.
- r. At approximately 2:34 p.m., the DPU Director called Henrico County's Director of Public Utilities and said that the WTP is not operating and may not be able to be restarted that day.
- s. At approximately 2:45 p.m., a virtual meeting was held with Richmond DPU and its regional partners to explain that the WTP was not operating and the City would soon run out of water.
- t. Between approximately 2:30 and 3:00 p.m., the City notified ODW for the first time of the Water Crisis.
- u. At approximately 4:30 p.m., the City issued a Boil Water Advisory.
- v. At approximately 6:30 p.m., DPU staff updated ODW that most of the Richmond Waterworks' water storage tanks were empty and the entire City was out of water.

6. On January 7, 2025:

- a. At approximately 8:15 a.m., Plant 1 had three filters rewashed and online along with a finished water pump. WTP operators began filling the finished water tank, with production at approximately 15.4 million gallons per day (MGD).
- b. At approximately 3:45 p.m., flooding began again in the Plant 2 basement while backwashing a filter. The backwash pumps had been manually turned off without

the operator's knowledge prior to initiating backwash. Richmond Waterworks operators turned on the pumps, but the area quickly flooded.

- c. At approximately 4:00 p.m., Richmond Waterworks operators were able to start pumps to dewater the Plant 2 basement area that had flooded. Effluent valve actuator panels that were open for drying, after the initial flooding event, were impacted by water splashing and had to be further dried out. This event delayed progress in returning the WTP to normal function.
- d. At approximately 4:30 p.m., Richmond Waterworks staff reconfigured the main plant electrical switchgear such that the bus tie was energized between both main feeds from Dominion, thereby placing the system into "summer mode" for added redundancy.
- e. At approximately 6:00 p.m., four filters were online in Plant 1 and production was at 24 MGD.

7. On January 8, 2025:

- a. At approximately 2:30 a.m., the SCADA system became operational.
- b. At approximately 10:00 p.m., the WTP achieved production of 76.5 MGD.

8. Between January 9 – 11, 2025:

- a. At approximately 11:00 a.m. on January 9, all service zones were repressurized to 20 psi gauge, the minimum required under the Regulations.
- b. A first set of water quality samples were taken to lift the Boil Water Advisory. On January 10, 2025, a second round of water quality samples were taken.
- c. On January 11, 2025, approximately 11:30 a.m., the Boil Water Advisories for the City, and Henrico, Hanover, and Goochland Counties were lifted.

Investigation into the Water Crisis

- 9. From January 7 through January 11, 2025, VDH ODW remained onsite at the City's WTP, located off Douglasdale Road in Richmond, to monitor response actions, promptly address regulatory needs, and provide technical assistance during the Water Crisis.
- 10. VDH retained SEH to help ODW investigate the Water Crisis. SEH provided a Comprehensive Waterworks Evaluation and Cost Estimate report dated April 8, 2025, which was released to the public and is Attachment A to this Order.
- 11. The City retained HNTB to perform an after-action assessment of the events that led to the Water Crisis. HNTB released an After-Action Assessment Report, dated March 31, 2025, which is Attachment B to this Order.

12. The Water Crisis was avoidable, preventable, and should not have happened:

- a. Despite the states of emergency issued by the Governor and Mayor, the City operated in “winter mode,” with main power to the WTP being provided by a single overhead main power feed from Dominion, as a cost-saving measure. Operation in winter mode increased the risk of a significant WTP failure due to a lack of redundancy. The Water Crisis would not have occurred had the WTP been operating in “summer mode” with better operational decisions.
- b. The DPU has been aware for years of the risk of flooding, yet did not take appropriate action to properly maintain critical back-up UPS systems to protect against a flooding event.
- c. The City failed to keep up with proper asset management of critical equipment.
- d. The WTP is overly reliant on manual operation. Back-up diesel generators that could provide power for limited operation require manual operation by qualified electrical maintenance staff. The City had placed undersized pumps, manually operated, to respond to flooding events. The Water Crisis would not have happened had the City taken proactive steps to prevent flooding rather than having reactive manual response.
- e. Critical electrical equipment, including pumps and motors that are not immersion rated, are located in an area of the WTP that is known to be susceptible to flooding. The location of this equipment significantly increases the risk of a catastrophic flooding event. The Water Crisis would not have happened if DPU had relocated critical equipment subject to a known flooding risk.
- f. The City had insufficient staff, specifically staff with electrical expertise, present at the WTP considering the known winter storm event. The reliance upon manual operation of critical portions of the WTP made it especially crucial that staff with the necessary knowledge, experience, and training be present. On the morning of January 6, 2025, DPU had three onsite operators – consisting of a Class 1 operator, a Class 3 operator, and a Class 4 operator. Two maintenance staff, titled mechanical specialists, were present and assigned snow removal duties, but one of them went home at 5:00 a.m. due to illness. The electrical supervisor arrived onsite about 45 minutes after power was lost at the WTP.
- g. Communication among WTP staff was ineffective and insufficient. Equipment was manually operated, including backwash waste pumps being manually shut off, without coordination and communication among staff. Failure to

communicate about this resulted in WTP operators being unaware of the situation and attempting to return to normal operations with backwashing the filters, which resulted in a secondary flooding event causing another minor delay to recovery at the WTP.

- h. The portable pumps, known as Godwin pumps, that Richmond Waterworks staff used to address the basement flooding were undersized and insufficient to address a major flooding event. The Godwin pumps are intended to address minor water infiltration from the filter clearwells into the pump rooms and filter pipe galleries, which was a known occurrence. The two Godwin pumps provide a pumping capacity of approximately 5 MGD, while the power failure caused a filter flow rate into the clearwells of approximately 60 MGD. After the valves were closed and the water levels stopped increasing, the Godwin pumps did allow for dewatering of the WTP and an eventual return to normal function.
- i. The City allowed a culture to persist among Richmond Waterworks staff where known problems, such as flooding, were viewed as obstacles to work around rather than problems to be solved, and maintenance was reactive. This culture resulted in the WTP staff focusing on specific individual operation tasks and not the primary and broader objective to provide safe and reliable water to the Richmond Waterworks' customers.
- j. Review of SOPs in place at the time of the investigation of the Water Crisis shows the City's SOPs were largely related to conducting distribution system repairs. At the time of the Water Crisis, the City had two emergency response-related SOPs in place: a "DPU Water Treatment Plan Emergency Response (ERP) – 2021 Update" that was specific to the WTP, and a "DPU Emergency Operations Manual (EOM) – 2021 Update" that was intended to be used across DPU departments. These SOPs were not widely distributed to WTP staff, they were only available in digital format, and some staff were unaware these documents existed. Operation of the WTP relied on the individual experience of operators rather than guidance provided by SOPs and other written documentation. Ultimately, the actions taken by DPU to dewater the WTP were in accordance with these SOPs. Additionally, the City did not have a specific training program in place for operations and maintenance staff at the WTP.
- k. The WTP had not been maintained in a clean and orderly condition. Significant clutter and abandoned equipment – both with and without power – storage containers, and other debris were evident at the WTP. Additionally, equipment and supplies were stored in inappropriate locations such as filter plant hallways,

underground flocculator hallways, and chemical rooms. The WTP had significant amounts of standing water.

- i. Some control instruments were past the manufacturer's design life. There was no functional alarm in the control room for switchgear.
 - m. According to SEH, the Richmond Waterworks needs approximately \$64 million in infrastructure upgrades, including approximately \$11 million to move pumps and electrical equipment out of the basement area that is susceptible to flooding. The City has developed a Capital Improvement Plan that outlines projects that have already been incorporated into the rate structure for the Richmond Waterworks.
- 13. Poor and improper operational decisions over many years caused or contributed to the Water Crisis, which resulted in DPU normalizing and accepting conditions that should not have been accepted:
 - a. Despite the increased likelihood of a winter weather event causing a power outage, DPU chose to operate the Richmond Waterworks in "winter mode," with a single, overhead main power feed to Dominion providing power to the WTP.
 - b. Despite declared states of emergency by the Governor and Mayor, staffing at the WTP overnight on January 5 into January 6 was insufficient to immediately and effectively respond to a power outage and subsequent flooding incident.
 - c. DPU staff displayed a lack of adequate proactive emergency response planning, equipment testing, and proactive asset management before the Water Crisis.
 - d. Despite decades of flooding events at the WTP, DPU never moved critical equipment susceptible to flooding and did not communicate the frequency and potential impact of flooding with its engineering contractors or VDH in the late 1980's and early 1990's when DPU requested to double the filter flow rate, which VDH approved. The increased filter flow rate, combined with the need to always keep clearwells nearly full, significantly increased the risk of a catastrophic flooding event. Flooding events in 2021 and 2022 were never reported to VDH. DPU accepted known flooding as a normal condition and did not communicate it to its engineering firm consultants or to regulatory agencies.
 - e. The City had insufficient SOPs and training, including a lack of written emergency SOPs, a failure to make the Richmond Waterworks' emergency response plan readily available, and a lack of staff training on key equipment

related to backup power. DPU did not adequately or timely communicate the critical flooding to stakeholders and regulators.

The Water Crisis – Regulatory Violations

14. The Regulations at 12VAC5-590-350.A state, “Frequent assessments shall be made by the [waterworks] owner of the water supply and waterworks to locate and identify health hazards to the waterworks. The manner and frequency of making these assessments, and the rate at which discovered health hazards are to be removed, shall be the responsibility of the owner. Every effort shall be made by the owner, to the extent of his jurisdiction, to prevent the degradation of the quality of water supplies.”

The City violated 12VAC5-590-350.A of the Regulations because the City: (a) failed to engage in proper oversight of the Richmond Waterworks, including failing to conduct needed maintenance, repair, and replacement of vulnerable equipment; (b) failed to address known hazards such as flooding of the clearwells and the exposure of key electrical components to a serious flooding event; and (c) failed to have the proper procedures in place to address known risks to the water supply.

15. The Regulations at 12VAC5-590-360.A state, “The [waterworks] owner shall provide and maintain conditions throughout the entirety of the waterworks in a manner that will assure a high degree of capability and reliability to comply with Part II (12VAC5-590-340 et seq.) of [the Waterworks Regulations]. This requirement shall pertain to the source water, transmission, treatment, storage, and distribution system facilities and the operation thereof. The owner shall identify and evaluate factors with the potential for impairing the quality of the water delivered to the consumers. Preventative control measures identified in Part II of [the Waterworks Regulations] shall be promptly implemented to protect public health.”

The City violated 12VAC5-590-360.A of the Regulations because the Richmond Waterworks experienced a loss of water pressure throughout the system with the exception to zone 7A that extended for multiple days and customers were subject to a Boil Water Advisory after pressure was restored. Additionally, neighboring localities that depended upon the Richmond Waterworks for service also were significantly impacted by the lack of water. The City’s acts and omissions, as discussed in paragraphs 5 through 13 above, caused the Water Crisis event following the loss of power from the one main power feed from Dominion that was being utilized on January 6, 2025, and the failure of the automatic transfer switch that was relied upon to switch power to the second main power feed. Additionally, the Richmond Waterworks relied on manual operation of other important components in the event of a power outage and flooding, such as a diesel generator and the dewatering pumps. Heavy reliance on manual operation negatively impacted the City’s ability to respond to the Water Crisis in as timely a manner as possible.

16. The Regulations at 12VAC5-590-450 state, “Waterworks operation comprises the constant oversight and management of the facilities and personnel. Consideration shall be given to such factors as the competency of personnel; water quality, including drinking water standards; water treatment plant maintenance and cleanliness; analytical laboratory control; and the operation and maintenance of the facilities, including water treatment plant equipment, distribution system equipment, and piping. As the complexity of the waterworks increases, so does the expertise and skill required of the operating staff.”

The City violated 12VAC5-590-450 of the Regulations because the City failed to exhibit adequate oversight and management of the facilities and personnel of the Richmond Waterworks. Specifically, the City: (a) failed to ensure the reliability of water production in the event of a power outage; (b) failed to properly maintain critical fail-safe equipment in the event of a power outage; (c) failed to adequately clean and maintain the Richmond Waterworks; (d) failed to have adequate SOPs; (e) failed to properly inform staff of SOPs that were in place and have staff prepared to address emergencies; (f) failed to have adequate staffing at the WTP at the time of the power outage on January 6, 2025, to effectively respond, especially given the WTP’s reliance on manual operation, which can be especially problematic in a crisis situation; and (g) failed to have a specific training program for Richmond Waterworks operations and maintenance staff in place to ensure that the expertise and skill of staff met was commensurate with the complexity of the Richmond Waterworks.

17. The Regulations at 12VAC5-590-470 state, “The waterworks shall be maintained in a clean and orderly condition.”

The City violated 12VAC5-590-470 of the Regulations because clutter and abandoned equipment – both with and without power – storage containers, and other debris was evident in the WTP. Equipment and supplies were stored in inappropriate locations, such as in filter plant hallways, underground flocculator hallways, and chemical rooms. Additionally, the WTP had areas with standing water and high moisture that could be resolved or better addressed to reduce risks of corroding equipment and building infrastructure.

18. The Regulations at 12VAC5-590-480.E state, in part, “Process control instruments, monitors, gauges, and controllers, including reading, recording, and alarm features, required in Part III, Manual of Practice (12VAC5-590-640, *et seq.*), shall be maintained fully operational and calibrated in accordance with the manufacturer instructions.”

The City violated 12VAC5-590-480.E of the Regulations because the WTP has abandoned or obsolescent equipment still in place making it difficult to know what process control instruments, monitors, gauges, and controllers are functional. Some control instruments were past the manufacturer’s design life. There was no functional alarm in the control room for switchgear.

19. The Regulations at 12VAC5-590-505.A – B state, “A. The owner of a community waterworks (including consecutive waterworks) shall develop and maintain an emergency management plan for extended power outages. B. The plan shall be kept current and shall be retained at a location that is readily accessible to the owner in the event of an extended power outage.”

The City violated 12VAC5-590-505.A – B of the Regulations because while the City has an emergency management plan for the Richmond Waterworks, it was not widely distributed, and not all critical WTP staff were aware of the emergency response procedures.

20. The Regulations at 12VAC5-590-510.C state, “All waterworks shall provide a minimum working pressure of 20 psigauge (psig) at all service connections.”

The City violated 12VAC5-590-510.C of the Regulations because water pressure in the distribution system, other than zone 7A, was below 20 psig beginning on January 6, 2025. All zones were repressurized to at least 20 psig by approximately 11:00 a.m. on January 9, 2025.

21. The Regulations at 12VAC5-590-725 state, in part, “The design of computers, including supervisory control and data acquisition (SCADA) systems if used to monitor and control water treatment and distribution system facilities, shall meet the following general requirements:... 4. Waterworks pumps, chemical feeders, and other essential electrical equipment controlled through a SCADA or an automated control system shall have the capability for independent manual operation. Where a high degree of reliability is required, a backup control system shall be provided.”

The City violated 12VAC5-590-725 of the Regulations because there was insufficient reliability and equipment maintenance based on the timeline for the Water Crisis event that began on January 6, 2025. The firmware for the SCADA system was not up-to-date for independent manual operation.

22. The Regulations at 12VAC5-590-730 state, “A. An emergency management plan for extended power outages shall be developed for each community waterworks as specified in 12VAC5-590-505. B. Alternative power sources at all waterworks shall be considered in the design to maintain a minimum level of service during an electrical power outage.”

The City violated 12VAC5-590-730 of the Regulations because the emergency management plan for the Richmond Waterworks did not adequately consider alternative and back-up power sources based on the timeline associated with a power outage, such as experienced during the Water Crisis.

The City’s Corrective Actions to Date in Response to the Water Crisis

23. The City will continue to operate the WTP in summer mode.

24. On February 21, 2025, DPU provided a written response (DPU's Response) to the NOAV issued by VDH to the City on January 23, 2025. DPU's Response states that the City has conducted training with operators and maintenance staff regarding power outages and that additional SOPs and revisions to current SOPs are being developed. DPU expects those materials to be completed in June 2025. DPU's Response further states that the bus tie that failed was replaced on January 13, 2025.
25. DPU's Response states that a new UPS was tested by the manufacturer on January 14, 2025, prior to installation, and a new UPS was tested during the commissioning process on January 17, 2025. UPS systems for the effluent filter operations were tested with new actuators and valves. UPS systems are upgraded.
26. DPU's Response states that the emergency generators will be upgraded to include an automatic transfer switch, with that project scheduled for completion in November 2025.
27. DPU changed its leadership team, increased staffing on shifts, and improved its organizational structure. The WTP now operates using both main power feeds as the standard procedure. DPU has five professional engineers on staff in senior leadership roles over the various sections of the Waterworks, an increase of five —the Department Director, the Director of Water and Administration, the Senior Deputy Director of Engineering Services, the Senior Deputy Director of Water Operations, and the Deputy Director of Water Operations.
28. The City replaced the bus tie that failed with new equipment and new controls for automatic transfer for the generator.
29. The City reports it has completed the following additional corrective actions:
 1. Installed filter effluent valve UPSs for Plant 1 and Plant 2 with one-hour runtime capacity.
 2. Installed SCADA UPS with one-hour runtime capacity.
 3. Updated program logic for Plant 1 to match Plant 2 to effluent valve closure protocols.
 4. Performed practical test on filter effluent valve to ensure function as intended.
 5. Established annual test of UPSs and filter effluent valves.
 6. Replaced Plant 1 valve actuators with actuators that have visual indicators.
 7. Reviewed safety program.
 8. Ordered new raw water meters.
 9. Repaired leak on Filter No.6.
 10. Repaired leak in pipe gallery.
 11. Completed repair for waste pump and associated valves.
 12. Installed secondary containment for sanitary sewage storage tanks.
 13. Installed fiberglass plate for walkway in Plant 2.

14. Repaired supporting column for altitude valve.
15. Previously completed condition assessment of storage tanks and identified Warwick Road Tank and Woodside Road as future projects. Projects are currently under design with an estimated start in fiscal year 2027.
16. Turbidimeter meters are compliant with EPA method 180.1 or other approved analytical methods listed in 40 CFR Parts 141 and 143. DPU has proactively obtained quotes for replacement meters to ensure availability of parts.
17. Addressed AOC-1 from EPA 2022 Report.
18. Addressed AOC-2 from EPA 2022 Report.
19. Addressed AOC-3 from EPA 2022 Report.
20. Acknowledged AOC-5 from EPA 2022 Report, no further action required.
21. Acknowledged AOC-6 from EPA 2022 Report, no further action required.
22. Addressed AOC-8 from EPA 2022 Report.
23. Addressed AOC-9 from EPA 2022 Report.
24. Addressed AOC-10 from EPA 2022 Report.
25. Addressed AOC-12 from EPA 2022 Report.
26. Addressed AOC-17 from EPA 2022 Report, capital improvement plan project underway for any additional concerns.
27. Addressed AOC-19 from EPA 2022 Report.
28. Addressed AOC-20 from EPA 2022 Report.
29. Addressed AOC-21 from EPA 2022 Report.
30. Addressed AOC-23 from EPA 2022 Report.
31. Addressed AOC-24 from EPA 2022 Report.
32. Addressed AOC-25 from EPA 2022 Report.
33. Addressed AOC-27 from EPA 2022 Report.
34. Addressed AOC-28 from EPA 2022 Report.
35. Addressed AOC-29 from EPA 2022 Report.
36. Addressed AOC-30 from EPA 2022 Report.
37. Addressed AOC-33 from EPA 2022 Report.
38. Addressed AOC-34 from EPA 2022 Report.
39. Addressed AOC-36 from EPA 2022 Report.
40. Addressed AOC-37 from EPA 2022 Report.
41. Addressed AOC-38 from EPA 2022 Report.
42. Addressed AOC-39 from EPA 2022 Report.
43. Addressed AOC-40 from EPA 2022 Report.
44. Addressed AOC-41 from EPA 2022 Report.
45. Addressed AOC-42 from EPA 2022 Report.
46. Addressed AOC-43 from EPA 2022 Report, Monthly Report to DPU Director.
47. Addressed AOC-44 from EPA 2022 Report, meets America's Water Infrastructure Act of 2018 (AWIA) requirements.
48. Addressed O-1 from EPA 2022 Report.
49. Addressed O-2 from EPA 2022 Report.
50. Addressed O-4 from EPA 2022 Report.
51. Addressed O-5 from EPA 2022 Report.
52. Addressed O-6 from EPA 2022 Report.

53. Addressed O-7 from EPA 2022 Report.
54. Addressed O-8 from EPA 2022 Report.
55. Addressed O-9 from EPA 2022 Report.
56. Addressed O-10 from EPA 2022 Report.
57. Addressed O-11 from EPA 2022 Report.
58. Addressed O-12 from EPA 2022 Report.
59. Addressed O-13 from EPA 2022 Report.
60. Addressed O-14 from EPA 2022 Report.
61. Acknowledged O-15 from EPA 2022 Report, no action required.
62. Addressed O-16 from EPA 2022 Report.
63. Addressed O-17 from EPA 2022 Report.
64. Addressed O-18 from EPA 2022 Report.
65. Addressed O-19 from EPA 2022 Report.
66. Addressed O-20 from EPA 2022 Report.
67. Acknowledged O-21 from EPA 2022 Report, no action required.
68. Acknowledged O-22 from EPA 2022 Report, no action required.
69. Addressed O-23 from EPA 2022 Report.
70. Addressed O-24 from EPA 2022 Report.
71. Addressed O-31 from EPA 2022 Report.
72. Addressed O-32 from EPA 2022 Report.
73. Acknowledged O-33 from EPA 2022 Report, no action required.
74. Addressed O-34 from EPA 2022 Report.
75. Addressed O-35 from EPA 2022 Report.
76. Addressed O-37 from EPA 2022 Report.
77. Addressed O-40 from EPA 2022 Report.
78. Addressed O-41 from EPA 2022 Report.
79. Addressed O-44 from EPA 2022 Report.
80. Addressed O-45 from EPA 2022 Report.
81. Addressed VDH-02 from the 2025 Sanitary Survey.
82. Addressed VDH-03 from the 2025 Sanitary Survey.
83. Addressed VDH-04 from the 2025 Sanitary Survey.
84. Addressed VDH-05 from the 2025 Sanitary Survey.
85. Addressed VDH-07 from the 2025 Sanitary Survey.
86. Addressed VDH-08 from the 2025 Sanitary Survey.
87. Addressed VDH-12 from the 2025 Sanitary Survey.
88. Typographical error in 2025 Sanitary Survey, as "VDH-12" is listed twice. Item is covered by EPA 2022 Report item O-37.
89. Addressed VDH-13 from the 2025 Sanitary Survey.
90. Addressed VDH-14 from the 2025 Sanitary Survey.
91. The City states that VDH-15 from the 2025 Sanitary Survey is not completely accurate, powdered activated carbon (PAC) has not been added.
92. Addressed VDH-16 from the 2025 Sanitary Survey.
93. VDH-17 from the 2025 Sanitary Survey is covered by EPA 2022 Report item O-42.
94. Addressed VDH-19 from the 2025 Sanitary Survey.

95. Addressed VDH-20 from the 2025 Sanitary Survey.
96. VDH-21 from the 2025 Sanitary Survey is covered by EPA 2022 Report item AOC-21.
97. Acknowledged VDH-22 from the 2025 Sanitary Survey, no action required.
98. Addressed VDH-23 from the 2025 Sanitary Survey.
99. Addressed VDH-24 from the 2025 Sanitary Survey.
100. VDH-25 from the 2025 Sanitary Survey is covered by EPA 2022 Report item AOC-42.
101. VDH-26 from the 2025 Sanitary Survey is covered by EPA 2022 Report item AOC-11.
102. Addressed VDH-27 from the 2025 Sanitary Survey.
103. Addressed VDH-29 from the 2025 Sanitary Survey, firm capacity restored.
104. Acknowledged VDH-31 from the 2025 Sanitary Survey, no action required.
105. Acknowledged VDH-32 from the 2025 Sanitary Survey, no action required.
106. VDH-33 from the 2025 Sanitary Survey is covered by EPA 2022 Report items AOC-31 and O-24/O-25.
107. Addressed VDH-34 from the 2025 Sanitary Survey.
108. Addressed VDH-35 from the 2025 Sanitary Survey.
109. VDH-36 from the 2025 Sanitary Survey is covered by EPA 2022 Report items AOC-28, AOC-29, AOC-30 and O-38.
110. VDH-37 from the 2025 Sanitary Survey is covered by EPA 2022 Report item AOC-40.
111. VDH-38 from the 2025 Sanitary Survey is covered by EPA 2022 Report item O-3.
112. Addressed VDH-41 from the 2025 Sanitary Survey.
113. Acknowledged VDH-42 from the 2025 Sanitary Survey, no action required.
114. Acknowledged VDH-43 from the 2025 Sanitary Survey, no action required.
115. Acknowledged VDH-44 from the 2025 Sanitary Survey, no action required.
116. Acknowledged VDH-45 from the 2025 Sanitary Survey, no action required.
117. Acknowledged VDH-46 from the 2025 Sanitary Survey, no action required.
118. Addressed VDH-47 from the 2025 Sanitary Survey.
119. VDH-49 from the 2025 Sanitary Survey is covered by EPA 2022 Report item AOC-7.
120. Addressed VDH-50 from the 2025 Sanitary Survey.
121. Addressed VDH-51 from the 2025 Sanitary Survey.
122. Acknowledged VDH-52 from the 2025 Sanitary Survey, no action required.
123. Evaluated VDH-53, space limitations prohibit.
124. VDH-54 from the 2025 Sanitary Survey is covered by EPA 2022 Report item AOC-40.
125. Acknowledged VDH-55 from the 2025 Sanitary Survey, no action required.
126. Acknowledged VDH-57 from the 2025 Sanitary Survey, no action required.
127. Acknowledged VDH-58 from the 2025 Sanitary Survey, no action required.
128. Acknowledged VDH-59 from the 2025 Sanitary Survey, no action required.
129. Addressed VDH-60 from the 2025 Sanitary Survey.
130. Addressed VDH-61 from the 2025 Sanitary Survey.

131. Addressed VDH-62 from the 2025 Sanitary Survey.
132. Acknowledged VDH-64 from the 2025 Sanitary Survey, no action required.
133. Acknowledged VDH-65 from the 2025 Sanitary Survey, no action required.
134. VDH-67 from the 2025 Sanitary Survey is covered by EPA 2022 Report item AOC-43.
135. VDH-68 from the 2025 Sanitary Survey is covered by EPA 2022 Report item O-32.
136. VDH-69 from the 2025 Sanitary Survey is covered by EPA 2022 Report item O-34.
137. VDH-70 from the 2025 Sanitary Survey is covered by EPA 2022 Report item O-34.
138. VDH-71 from the 2025 Sanitary Survey is covered by EPA 2022 Report item O-34.
139. Addressed VDH-72 from the 2025 Sanitary Survey.
140. Acknowledged VDH-74 from the 2025 Sanitary Survey, no action required.
141. Addressed VDH-75 from the 2025 Sanitary Survey.
142. Addressed VDH-76 from the 2025 Sanitary Survey.
143. Acknowledged VDH-77 from the 2025 Sanitary Survey, no action required.
144. Acknowledged VDH-78 from the 2025 Sanitary Survey, no action required.
145. Addressed VDH-79 from the 2025 Sanitary Survey.
146. Acknowledged VDH-80 from the 2025 Sanitary Survey, no action required.
147. Acknowledged VDH-81 from the 2025 Sanitary Survey, no action required.
148. Acknowledged VDH-82 from the 2025 Sanitary Survey, DEQ has oversight over regional water supply planning under 9VAC25-780.
149. Acknowledged VDH-83 from the 2025 Sanitary Survey, no action required.
150. VDH-84 from the 2025 Sanitary Survey is covered by EPA 2022 Report item O-46.
151. Acknowledged VDH-85 from the 2025 Sanitary Survey, no action required.
152. Acknowledged VDH-86 from the 2025 Sanitary Survey, no action required.
153. Acknowledged VDH-87 from the 2025 Sanitary Survey, no action required.
154. Addressed VDH-88 from the 2025 Sanitary Survey.
155. Acknowledged VDH-89 from the 2025 Sanitary Survey, no action required.

VDH acknowledges the commitment by the City of Richmond to address or respond to the above items. While VDH has not confirmed all the items listed above, for the purpose of this Consent Order, these items are considered adequately addressed. As VDH continues its efforts to verify and inspect the City's improvement and actions, ODW will address any concern through routine inspections and communication with the City.

Sanitary Survey of the Richmond Waterworks

30. ODW conducted the Sanitary Survey and issued a Sanitary Survey Report to the City on April 16, 2025. The Sanitary Survey Report identifies 12 significant deficiencies. The Sanitary Survey Report is Attachment C to this Order.

31. In accordance with the timeframes set forth in 12VAC5-590-350.D of the Regulations, the City is required to confer with VDH regarding corrective actions and a schedule to implement the corrective actions in order to address the identified significant deficiencies, and to submit to VDH a Corrective Action Plan and schedule.
32. In addition to the 12 significant deficiencies identified in the Sanitary Survey Report, the Sanitary Survey Report also identified 26 minor deficiencies and 52 recommendations for improvements at the Richmond Waterworks.

EPA Inspection and ODW Review

33. The EPA conducted an inspection of the Richmond Waterworks in 2022 and issued a Safe Drinking Water Act Compliance Inspection Report. In the aftermath of the Water Crisis, RFO conducted a follow-up site visit to review the status of the City's progress in addressing the areas of concern identified by EPA.
34. On April 7, 2025, RFO issued a report on the findings of its follow-up site visit. RFO's report catalogs the respective status of 44 areas of concern identified by EPA's 2022 report. RFO's report also identifies 46 EPA observations from 2022, stating ODW's follow-up observations made from January to March 2025. RFO's report on the findings of its follow-up inspection to the EPA's 2022 Safe Drinking Water Act Compliance Inspection Report is Attachment D to this Order.

Notices of Alleged Violation

35. VDH issued Notices of Alleged Violation to the City on January 23, 2025, and May 1, 2025. This Order makes those Notices of Alleged Violation irrelevant.

Section C. Agreement and Order

Accordingly, by virtue of the authority granted in Va. Code §§ 32.1-26 and 32.1-27, the Board orders the City, and the City agrees, to:

1. Perform the actions described in Appendix A of this Order.
2. Pay a civil charge of **\$6,817.00** within 30 days of the effective date of this Order in settlement of the violations cited in this Order.

Payment shall be made by check, certified check, money order or cashier's check payable to the "Treasurer of Virginia," and shall be delivered to:

Virginia Department of Health
Office of Drinking Water
109 Governor Street, 6th Floor
Richmond, Virginia 23219

The City shall indicate that the payment is being made in accordance with the requirements of this Order for deposit into the Virginia Water Supply Assistance Grant Fund. If VDH must refer collection of monies due under this Order to the Department of Law, the City shall be liable for attorneys' fees of 30% of the amount outstanding.

Section D. Administrative Provisions

1. This Order addresses and resolves only those violations specifically identified in Section B of this Order. This Order shall not preclude VDH from taking any action authorized by law, including but not limited to taking any action authorized by law regarding additional, subsequent, or subsequently discovered violations or taking subsequent action to enforce this Order.
2. This Order does not suspend, minimize, or otherwise alter the City's obligation to comply with federal, state, and local laws and regulations. The Board does not waive any lawful means of enforcing the laws it administers, the regulations it has adopted, or this Order. For the purpose of this Order and subsequent actions with respect to this Order only, the City admits the jurisdictional allegations, and agrees not to contest, but neither admits nor denies, findings of fact and conclusion of law contained herein.
3. The City agrees that it has received fair and due process under the Administrative Process Act (Va. Code § 2.2-4000, et seq.) and waives its right to further hearings or challenges, whether civil or administrative, regarding the terms, conditions, or issuance of this Order and specifically waives its rights to a hearing under Va. Code §§ 2.2-4019 or 2.2-4020 as a predicate for issuance of this Order. The City consents to the issuance of this Order freely, voluntarily, and after an opportunity to consult counsel of its choice.
4. Any plans, reports, schedules, or specifications submitted by the City and approved by the Department pursuant to this Order are incorporated into this Order. Any non-compliance with such approved documents shall be considered a violation of this Order.
5. To the fullest extent allowed by law, this Order is binding on the City, its agents and legal representatives, heirs, devisees, executors, administrators, and successors in interest, jointly and severally as applicable.
6. The Board may modify, rewrite, or amend this Order with the consent of the City. Additionally, the Board may modify, rewrite, or amend this Order on the Board's own motion pursuant to the Administrative Process Act, Va. Code §§ 2.2-4000, et seq., after the City has received notice and an opportunity to be heard. Any request by the City for modification of this Order shall be submitted to VDH in writing to be considered for approval by the Board or its designee.

7. This Order shall not preclude the Board, the Commissioner, or the Department from taking any action authorized by law, including but not limited to: (1) taking any action authorized by law regarding any additional, subsequent, or subsequently discovered violations; (2) seeking subsequent remediation of the facility; or (3) taking subsequent action to enforce this Order.
8. Failure by the City to comply with any terms of this Order shall constitute a violation of an order of the Board. Nothing herein shall waive the initiation of appropriate enforcement actions or the issuance of additional orders as appropriate by the Board or Department as a result of such violations. Nothing herein shall affect appropriate enforcement actions by any other federal, state, or local regulatory authority.
9. If any provision of this Order is found to be unenforceable for any reason, the remainder of the Order shall remain in full force and effect.
10. The City shall be responsible for failure to comply with any of the terms and conditions of this Order unless compliance is made impossible by earthquake, flood, other acts of God, war, strike, or such other unforeseeable circumstances beyond its control and not due to a lack of good faith or diligence on its part. The City shall demonstrate that such circumstances were beyond its control and not due to a lack of good faith or diligence on its part. The City shall notify the Department in writing within three business days when circumstances are anticipated to occur, are occurring, or have occurred that may delay compliance or cause noncompliance with any requirement of this Order. Such notice shall set forth:
 - a. The reasons for the delay or noncompliance;
 - b. The projected duration of any such delay or noncompliance;
 - c. The measures taken and to be taken by the City to prevent or minimize such delay or noncompliance; and
 - d. The timetable by which the City will implement such measures and the date full compliance will be achieved.

Failure by the City to notify the Department verbally within 24 hours and in writing within three business days of learning of any condition above, which the City intends to assert will result in the impossibility of compliance, shall constitute a waiver by the City of any claim to inability to comply with a requirement of this Order.

11. This Order shall become effective on the 15th day after a copy of it is mailed to the City by certified mail. Va. Code § 32.1-26.
12. This Order shall continue in effect until:
 - a. The Commissioner or the Commissioner's designee terminates the Order after the City of Richmond has completed all of the requirements of this Order;

- b. The Commissioner or the Commissioner's designee terminates the Order after finding that the circumstances that led to the Order's issuance no longer exist, and that the Order is no longer needed to enforce the PWSL and Regulations to protect the public health;
 - c. The City petitions the Commissioner or the Commissioner's designee to terminate the Order after the City has completed all of the requirements of the Order and the Commissioner or the Commissioner's designee approves the termination of the Order; or
 - d. The Commissioner or the Commissioner's designee, or the Board, in their sole discretion, terminates the Order upon 30 days' written notice to the City. Termination of the Order pursuant to this authority without the City having satisfied all terms of the Order may result in VDH pursuing further enforcement related to the violations identified in the Order.
13. Termination of this Order, or any obligation imposed in this Order, shall not operate to relieve the City from its obligation to comply with any statute, regulation, permit condition, other order, certificate, standard, or requirement otherwise applicable.
14. The undersigned representative of the City certifies that they are a responsible official authorized to enter into the terms and conditions of this Order and to execute and legally bind the City to this document. Any documents to be submitted pursuant to this Order shall also be submitted by a responsible official of the City.
15. By its signature below, the City voluntarily agrees to the issuance of this Order.

It is SO ORDERED.

STATE BOARD OF HEALTH
Commonwealth of Virginia



Karen Shelton, MD
State Health Commissioner

06/02/2025

SIGNATURE AND NOTARY PAGE

The City of Richmond voluntarily agrees to the issuance of this Order.

Sharon L. Ebert

Print Name

Interim Chief Administrative Officer

Title

June 12, 2025

Date

Sharon L. Ebert

Signature

Notary Public:

Commonwealth of Virginia

City/County of

Richmond

The foregoing document was signed and acknowledged before me this 12th day of

June

, 2025, by

Sharon L. Ebert

who is signing on behalf of

the City of Richmond.

Jacqueline R. Howie

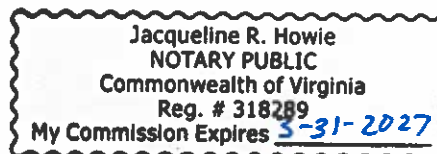
Notary Public

318289

Registration No.

My commission expires: March 31, 2027

Notary seal:



Appendix A

Corrective Action Plan and Schedule for Compliance

The City shall:

- a. Pursuant to 12VAC5-590-350.D of the Regulations, consult with ODW regarding appropriate corrective actions with a schedule for implementation to address the significant deficiencies set forth in the Sanitary Survey Report issued to the City.

Beginning with the calendar quarter that this Order becomes effective, provide RFO with quarterly progress reports regarding the status of the City's efforts to address each of the significant deficiencies identified in the Sanitary Survey Report, as set forth in the City's Significant Deficiencies Corrective Action Plan (CAP) and Schedule. The progress reports are due by the 10th day after the last day of the quarter being reported on. Upon completion of the Significant Deficiencies CAP, submit to RFO a final report verifying that the Significant Deficiencies CAP has been completed.

- b. Within 120 days of the effective date of this Order, provide RFO with a list of current and updated SOPs, or a statement of the date(s) that the current SOPs were last updated since January 6, 2025, or that the SOPs do not require a further update at this time, especially with respect to power outage response.

Continue to ensure back-up power systems are routinely exercised and tested pursuant to SOP(s), including prior to storm events, to prevent flooding or other damage to the WTP or loss of water service. SOP(s) must include the frequency and procedures to test critical equipment and back-up power supplies on a periodic basis, as well as before storm events, and the frequency and procedures to practice transitioning the WTP from commercial power to emergency power and returning to commercial power; and maintenance, construction, and other project oversight.

The SOP(s) must include roles and responsibilities of Richmond Waterworks staff in carrying out the action items within the SOP(s). In addition, the City must provide RFO with documentation that training was conducted on the SOP(s).

- c. Within 120 days of the effective date of this Order, provide RFO the schedule for periodic testing of emergency backup systems at the Richmond Waterworks.
- d. Within 120 days of the effective date of this Order, collaborate with RFO and commit to completing a business operation plan with RFO by submitting to RFO the following items:
 - a. Capital improvement plan (CIP)
 - b. Updated organizational charts
 - c. Water Asset Management Plan (AMP) or equivalent documents
 - d. Approved budget

- e. Output from most recent rate model run
 - f. List of active contracts for water related services
- e. Within 120 days of the effective date of this Order, or as otherwise possible and appropriate, provide RFO with a comprehensive spreadsheet to RFO's satisfaction of all regulatory violations identified in this Order, and all deficiencies, areas of concern, and recommendations in: (1) the Sanitary Survey Report; (2) EPA's 2022 Safe Drinking Water Act Compliance Inspection Report and RFO's April 7, 2025, report regarding the findings of RFO's follow-up site visit; (3) the HNTB report, and (4) the SEH report.

For each regulatory violation, deficiency, area of concern, and recommendation, the City's comprehensive spreadsheet must include the City's CAP consisting of actions, already taken or planned, for addressing each item and a schedule (Schedule) for execution of the City's CAP for ODW's review and approval, in order to return the Richmond Waterworks to compliance with the PWSL and the Regulations. The City must include in the comprehensive spreadsheet responsive information for each regulatory violation, deficiency, area of concern, and recommendation, even if the City has resolved the identified item prior to the City creating the comprehensive spreadsheet.

After submission of the comprehensive spreadsheet, the City must provide ODW with quarterly progress reports to resolve or respond to each identified item in the CAP. This comprehensive spreadsheet constitutes the City's entire CAP and Schedule and must incorporate the Significant Deficiencies CAP and Schedule addressing the 12 significant deficiencies identified in the Sanitary Survey Report and required pursuant to 12VAC5-590-350.D of the Regulations, discussed in paragraph a. above.

The City may provide the RFO with quarterly progress reports in conjunction with the status update of the City's efforts to address each of the significant deficiencies identified in the Sanitary Survey Report, or at another less frequent period agreed to by both parties.

- f. The City can begin implementing the CAP in accordance with the Schedule subject to RFO's direction. The approved CAP and Schedule shall become a part of, and enforceable under, the terms of this Order. If the City does not present a CAP and Schedule with terms that are acceptable to ODW such that ODW cannot approve it, and the City and ODW are unable to reach agreement on the terms of a mutually agreeable CAP and Schedule, the Board or Commissioner may terminate this Order subject to Section D.12.d of this Order, which may result in further enforcement action against the City as stated therein.
- g. After initial approval of the CAP and Schedule by ODW, submit any proposed modifications to the CAP and Schedule to RFO for review, discussion and consideration for approval prior to the City taking any action. The City shall submit any proposed modification of the CAP and Schedule to RFO at least 30 days prior to expiration of a deadline that the City seeks to modify.

- h. Upon completion of the CAP, submit to RFO a final report verifying that the CAP has been completed in accordance with the terms of this Order.
- i. Mail, email, fax, and/or personal delivery of all submittals and reports required by this Order to:

VDH - Office of Drinking Water - Richmond Field Office
c/o Compliance Specialist
109 Governor Street, 6th Floor
Richmond, Virginia 23219
Office phone number: (804) 864-7409
Email address: ODWFieldOffice4@vdh.virginia.gov