



COMMONWEALTH of VIRGINIA

DEPARTMENT OF HEALTH

OFFICE OF DRINKING WATER

Richmond Field Office

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August 15, 2025

Mr. Scott Morris, Director
City of Richmond Department of Public Utilities
730 East Broad Street, 6th Floor
Richmond, Virginia 23219

RE: City of Richmond, PWSID 4760100

Dear Mr. Morris:

On August 7, 2025, I conducted a site visit to the City of Richmond Water Treatment Plant (WTP) to verify completion of several items identified as significant deficiencies in our sanitary survey conducted in January and February of 2025. While on site, there was also discussion on progress on outstanding items related to the significant deficiencies and the consent orders issued on June 13 and July 1, 2025. Overall, general observations were that the water treatment plant was significantly improved in terms of general housekeeping and organization. No debris or garbage was observed in the filter pipe gallery and items were stored in an organized fashion. There appears to be steady forward positive progress in addressing systemic issues at the waterworks and should be noted.

1. Significant Deficiencies

The sanitary survey identified 12 significant deficiencies which are outlined in the following table along with current status:

Observation Number	Observation	Source Document	Severity	Status
VDH-01	WTP staff indicated raw water meters were unreliable and were not confident enough in the measured flow values to flow pace coagulant dosage through SCADA. Raw water chemical dosages, including coagulant dosages, are critical for the adequate treatment of surface water sources and rely on raw water flow measurements for accurate dosage of coagulant. Currently dosages are manually calculated utilizing filter flow rates and dosages adjusted manually.	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates raw water meter purchased and anticipate delivery by July 31, 2025, and installation by December 31, 2025. Installation will take place during lower demand season.</p> <p>Update August 7: Meter purchased, however delivery delayed to August by supplier. Installation by December 31, 2025 still anticipated.</p> <p>Status: Continue to monitor progress.</p>
VDH- 02	Filter No. 6 appeared to have an active leak through the concrete in the filter pipe gallery. Prolonged leaking could potentially compromise the concrete and result in failure of the filter.	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates concrete has been repaired.</p> <p>Update August 7: Did not observe leak during site visit, concrete appeared to be repaired. (Figure 1)</p> <p>Status: Resolved</p>

Observation Number	Observation	Source Document	Severity	Status
VDH-03	There appeared to be an active leak in the pipe gallery that appeared to have either biological growth or just appeared slimy. The leak should be investigated.	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates concrete has been repaired.</p> <p>Update August 7: Did not observe leak during site visit, concrete appeared to be repaired. Biological growth not observed. (Figure 2)</p> <p>Status: Resolved</p>
VDH-04	One pump was out of service and removed from its pedestal. A significant leak was observed coming from the isolation valve body (with a mat appearing to divert water away from an electrical box) and through the temporary cover plate. The check valve needs to be investigated, as do the gate valve and cover plate. Failure of the cover plate could result in flooding in the backwash waste pump area and pipe gallery.	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates repairs complete.</p> <p>Update August 7: Leak not observed from valve body, pump has been reinstalled. Standing water on floor was minimal and did not appear to originate from pump. (Figure 3)</p> <p>Status: Resolved</p>

Observation Number	Observation	Source Document	Severity	Status
VDH-05	Sanitary sewage storage tanks housed in filter gallery area with no secondary containment. Raw sewage could potentially enter the clearwell through access hatches and penetrations into the clearwell if the sanitary sewage storage tank failed without secondary containment.	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates a concrete berm was installed around tanks.</p> <p>Update August 7: Concrete berm observed around sanitary tanks to provide secondary containment in case of spill. (Figure 4)</p> <p>Status: Resolved</p>
VDH-06	<p>No overflow piping observed for Plant 1 or Plant 2 filtered water clearwell. This means there is no ability to route overflowing clearwell water away from flooding the pipe gallery area. When water in the clearwell reaches overflow levels, water floods the pipe gallery area through the clearwell vents and other pipe penetrations and access hatches and bolted covers.</p> <p>It is likely that a portion of this water migrates back into the clearwell, along with potential contamination from the floor and pumping equipment. This is a potential cross connection that should be mitigated by minimizing flooding events in the pipe gallery and keeping the area clean. COR should conduct and engineering evaluation to determine if sealing of pipe penetrations, access hatches, and other means of entry into the clearwell is advisable</p>	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates working with Whitman Requardt and Associates and a Technical Memorandum will be completed by November 30, 2025. In the interim, a weekly inspection will be performed by the newly assigned staff at the Water Treatment Plant to minimize dirt and debris in general area.</p> <p>Update August 7:</p> <p>Technical Memorandum still on schedule. Dirt and debris in pipe</p>

Observation Number	Observation	Source Document	Severity	Status
				<p>gallery was significantly reduced and standing water was minimized during site visit.</p> <p>Status: Continue to monitor progress.</p>
VDH- 07	<p>The walkway on Plant 2 at the end of the finished water basin did not appear to have a solid base beneath the grating, allowing dirt to fall directly into the finished water from shoes, etc. A solid base should be installed beneath the grating. Scum was observed in the water at the end of the aeration basins. The source of the scum should be investigated and addressed</p>	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates a solid base has been installed below the walkway on Plant 2. Scum removed from aeration basin, staff will continue to identify and evaluate factors with the potential for impairing the quality as part of our normal operations.</p> <p>Update August 7:</p> <p>Solid base placed over grate to mitigate dirt falling from walkway into basin. Water was clear and free of accumulated scum at the end of the basin. Walkway</p>

Observation Number	Observation	Source Document	Severity	Status
				was clean and free of dirt and debris. (Figure 5) Status: Resolved
VDH-08	A piece of wood is supporting an altitude valve where a concrete support is heavily deteriorated. The wood and concrete support are not adequate, and a more permanent repair should be made. Damage to the valve or associated piping may impair tank operations.	VDH Sanitary Survey Report	Significant Deficiency	May 16, 2025, letter from DPU indicates concrete support has been repaired. Update August 7: See Figure 6, support has been repaired Status: Resolved
VDH-09	Several tanks equipped with overflows that were piped to stormwater drains and sanitary sewer with no knowledge of backflow prevention provided. COR should investigate connection and determine degree of hazard and provide appropriate protection.	VDH Sanitary Survey Report	Significant Deficiency	May 16, 2025, letter from DPU indicates working with Whitman Requardt and Associates and a Technical Memorandum will be completed that summarizes all overflows from these tanks and backflow prevention. Update August 7: Technical Memorandum still on schedule. Dirt and debris in pipe gallery was significantly reduced and standing water

Observation Number	Observation	Source Document	Severity	Status
				<p>was minimized during site visit.</p> <p>Status: Continue to monitor progress.</p>
VDH-10	<p>The April 2023 tank inspection report observed heavy chalking and areas of corrosion on the roof of both the Woodside Road Tank and Warwick Road Tank. At the Woodside Road Tank, rubber gaskets on the access ports were deteriorated and allowed the surface water to enter the tank. Areas of light were observed in the roof from the remotely operated vehicle used to conduct interior tank inspections. These are potential conduits of surface water and contamination into the potable water in the storage tank.</p>	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates condition assessments have been conducted (2020 condition assessment, 2024 water storage tank prioritization report, 2025 water treatment plan facilities condition assessment). In addition, condition assessment conducted by SEH in conjunction with VDH-ODW. These items will be incorporated into the CIP, provided by November 1, 2025.</p> <p>Update August 7:</p> <p>Still on schedule to provide CIP by November 1, 2025.</p> <p>Status: Continue to monitor progress.</p>

Observation Number	Observation	Source Document	Severity	Status
VDH-11	There are various pumps, valves, piping, and other equipment that appear to have severe corrosion that may result in failure of the critical infrastructure. COR should conduct a condition assessment of all their assets in both the WTP and distribution system and identify what assets need repair, rehabilitation, or replacement.	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates condition assessments have been conducted (2020 condition assessment, 2024 water storage tank prioritization report, 2025 water treatment plan facilities condition assessment). In addition, condition assessment conducted by SEH in conjunction with VDH-ODW. These items will be incorporated into the CIP, provided by November 1, 2025. All finished water pumps have been or scheduled for refurbishment or replacement to address corrosion concerns. Additional maintenance staff have been assigned for piping and valve upkeep.</p> <p>Update August 7:</p> <p>Still on schedule to provide CIP by November 1, 2025.</p>

Observation Number	Observation	Source Document	Severity	Status
				Status: Continue to monitor progress.
VDH-12	<p>Hach turbidimeters (FilterTrak 660sc and 1720E) appear to be obsolete by the company, making it harder to obtain parts for maintenance and repair. System should investigate replacement of units as they reach end of life.</p> <p>Some turbidimeters appeared to be replaced with Rosemount Clarity II turbidimeters which appear to still be supported, but do not comply with EPA method 180.1 or other approved analytical methods listed in 40 CFR Parts 141 and 143 and should be replaced with EPA compliant versions of the turbidimeters. Standardization of equipment would help with keeping spare parts.</p>	VDH Sanitary Survey Report	Significant Deficiency	<p>May 16, 2025, letter from DPU indicates proactively replacing meters and expects to be completed by December 31, 2025.</p> <p>Update August 7:</p> <p>Still on schedule to complete replacements by December 31, 2025.</p> <p>Status: Continue to monitor progress.</p>

2. New doors installed

New doors were installed in the hallway between Plants 1 and 2. The installed doors provide the ability to open fully, allowing room to move large equipment without the need to completely remove the doors. See Figure 7.

3. June 28, 2025 Consent Order

This consent order was centered around the January 2025 events and the sanitary survey conducted by this Office during the January through February 2025 time period. A summary of status updates is provided in the table below.

Corrective Action Plan Item	Requirement	Source Document	Due Date	Status
Item a.	<p>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.</p> <p>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.</p>	June 28, 2025 Consent Order	First quarterly progress report due October 10, 2025	<p>May 16, 2025, letter from DPU provided summary of resolved significant deficiencies and schedules for addressing the remaining significant deficiencies.</p> <p>Update August 7: RFO verified completion of resolved significant deficiencies. Schedules are still on track for remaining items.</p> <p>Status: Quarterly progress report due October 10, 2025.</p>
Item b.	<p>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.</p> <p>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</p>	June 28, 2025 Consent Order	List due October 26, 2025	<p>Complete list not yet provided, however numerous SOPs have been submitted for review.</p> <p>Update August 14: As of August 14, 2025, City of Richmond has submitted around 44 SOPs for RFO review. RFO has provided comment to the 44 SOPs.</p>

Corrective Action Plan Item	Requirement	Source Document	Due Date	Status
	<p>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.</p> <p>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).</p>			<p>SOPs include storm preparation, power loss, plan shutdown and startup, and emergency response.</p> <p>Status: List due October 26, 2025</p>
Item c.	<p>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.</p>	<p>June 28, 2025 Consent Order</p>	<p>Schedule due October 26, 2025</p>	<p>Schedule not yet provided.</p> <p>Update August 7: Conversation with waterworks indicates they are aware of due dates and are actively working on meeting timelines.</p> <p>Status: Schedule due October 26, 2025</p>
Item d.	<p>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:</p> <ul style="list-style-type: none"> A. Capital Improvement Plan (CIP) B. Updated organizational charts 	<p>June 28, 2025 Consent Order</p>	<p>Schedule due October 26, 2025</p>	<p>Schedule not yet provided.</p> <p>Update August 7: Conversation with waterworks indicates they are aware of due dates and are actively</p>

Corrective Action Plan Item	Requirement	Source Document	Due Date	Status
	<p>C. Water Asset Management Plan (AMP) or equivalent documents</p> <p>D. Approved budget</p> <p>E. Output from most recent rate model run</p> <p>F. List of active contracts for water related services</p>			<p>working on meeting timelines.</p> <p>Status: Schedule due October 26, 2025</p>
Item e.	<p>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.</p> <p>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.</p>	June 28, 2025 Consent Order	<p>Spreadsheet due October 26, 2025</p> <p>Quarterly progress reports begin January 10, 2026 at latest</p>	<p>Spreadsheet not yet provided.</p> <p>Update August 7: Conversation with waterworks indicates they have spreadsheet drafted and will meet October 26, 2025 deadline</p> <p>Status: Spreadsheet due October 26, 2025</p>

Corrective Action Plan Item	Requirement	Source Document	Due Date	Status
	<p>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 12V ACS- 590-350. D of the Regulations, discussed in paragraph a. above.</p> <p>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.</p>			

4. July 26, 2025 Consent Order

This consent order was centered around the filter clogging event on May 27, 2025, which led to a Boil Water Advisory for the waterworks. A summary of status updates is provided in the table below.

Corrective Action Plan Item	Requirement	Source Document	Due Date	Status
Item a	Within 120 days of the effective date of this Order, submit to RFO a report outlining which recommendation contained within the Filter Optimization Plan will be incorporated into the operations of the WTP. The report shall set forth actions that the	July 26, 2025 Consent Order	November 23, 2025	<p>Report not yet provided.</p> <p>Update August 7: Conversation with waterworks indicates they are</p>

Corrective Action Plan Item	Requirement	Source Document	Due Date	Status
	City has taken or plants to take, and a schedule that the City plans to incorporate them.			aware of due dates and are actively working on meeting timelines. City has indicated they have already increased prioritization of plate settler cleaning and maintenance to ensure they do not accumulate excessive amounts of sludge. Status: Report due November 23, 2025

This Office appreciates the continued work and effort the City has put forth in the past six months to work on establishing a roadmap for increasing the resiliency of the water treatment system. The effort has included not only money and time, but a push to changing the culture within the organization to be more proactive and prepared for all situations.

Please keep the outlined deadlines in consideration and contact us if any modifications to those deadlines are required. Modifications should be requested in advance of the end of the deadline in order to allow review and coordination of the proposed modified deadlines.

Please feel free to contact me at james.reynolds@vdh.virginia.gov or (757) 406-1252 if you have any questions.

Sincerely,

James Reynolds, PE
Field Director
Richmond Field Office

Appendix A. Photos



Figure 1 Filter 6 wall (left- Sanitary Survey, right- August 7, 2025)

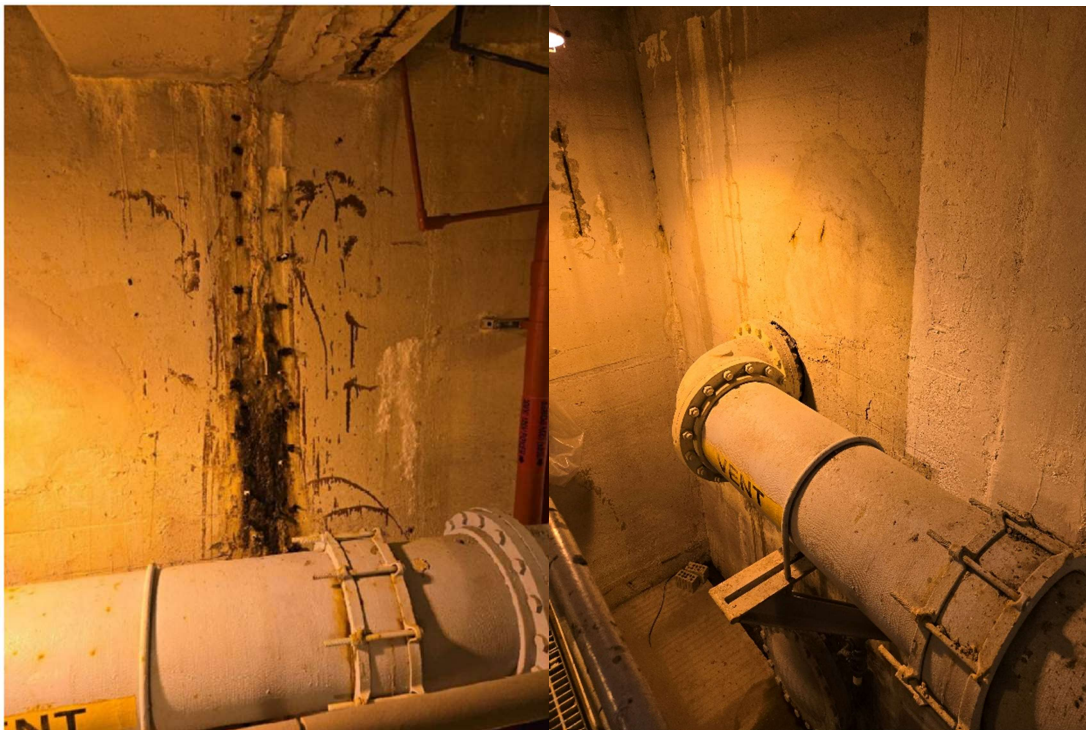


Figure 2 Plant 1 leak and biological growth (left- Sanitary Survey, right- August 7, 2025)

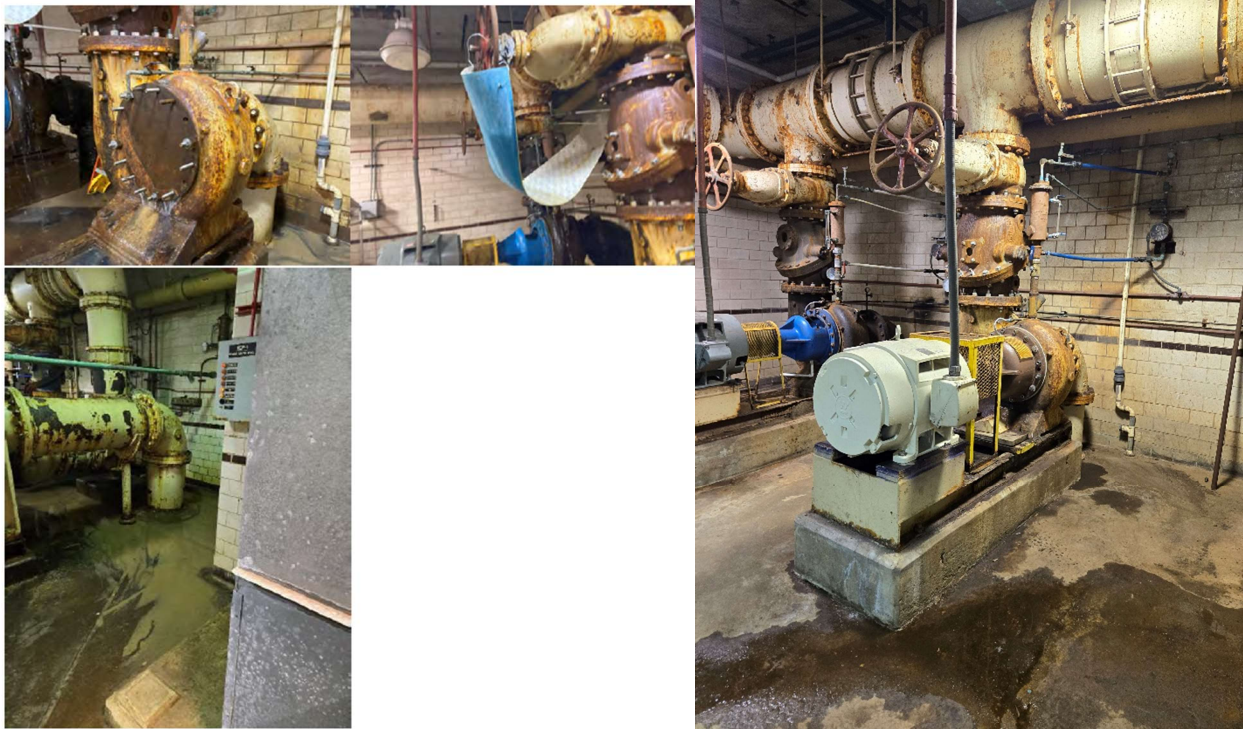


Figure 3 Backwash Waste Pump leak (left and middle- Sanitary Survey, right- August 7, 2025)



Figure 4 Containment berm around sanitary sewage tanks (Left- SEH Condition Assessment Report, Right- August 7, 2025)



Figure 5 Finished water basin walkway (Top- Sanitary Survey, Bottom- August 7, 2025)



Figure 6 Warwick Road Support (Left- Sanitary Survey, Right- August 2025)



Figure 7 New doors installed