QUESTIONS AND ANSWERS

Department of Public Utilities
June 2025

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I. Governmental Operations Committee Questions

1. WTP oxidation system and any relevance to current boil water advisory.

Answer:

The primary purpose of such a system is that it helps convert manganese and soluble iron into insoluble forms for easier filtration. It can also help with oxidizing various organic contaminants. A secondary purpose of the treatment is the control of unpleasant taste and odors. Manganese and soluble iron was not the cause of the turbidity issue with the filter. The system is prone to clogging and will need the pumps, piping, and additional flushing line to prevent similar issues in the system due to the infrequent/seasonal use.

2. WTP maintenance completed since January 2025

Answer:

There have been 483 preventative work orders completed since January 2025. There have been 670 corrective work orders completed since January 2025.

3. Plans for after-action review of WTP issues with VDH

Answer:

These items are typically handled through Notices of Alleged Violation (NOAV), Consent Orders, or Inspection Reports. No further corrective actions are expected for the NOAV associated with the fluoride event. A NOAV may be received for the second boil water advisory (May 2025). Additional coordination or a Consent Order is expected for the first boil water advisory (January 2025).

II. Oxidation System Status

4. When did the oxidation system go offline, and what caused the shutdown?

Answer:
December 2024, seasonal shutdown and system clogging.

5. *Is it concerning that your team did not make you aware that this system was down?*

Answer:
Temperature and weather changes typically correspond with the need to add potassium permanganate for the purpose of manganese removal after periods of heavy precipitation. It is not concerning that staff did not inform me the system was not operational for two reasons: 1) it is seasonal treatment, and 2) it is not required for compliance.

6. *What impact has this had on the plant's ability to remove organic material and other contaminants?*

Answer:
The primary purpose of the potassium permanganate system is that it helps convert manganese and soluble iron into insoluble forms for easier filtration. It can also help with oxidizing various organic contaminants. The treatment works has not had any issues with organic contaminants.

7. *Were any interim or compensatory treatment steps used to address the absence of oxidation?*

Answer:

Potassium permanganate is not a mandated treatment for all waterworks in Virginia; chorine is an oxidant also.

8. *What is the standard process for documenting and reporting system outages internally?*

Answer:

This depends on if it is a planned outage or an unplanned outage and if the outage is for maintenance or a CIP project. Planned outages are documented in the workorder management system as a preventative workorder to facilitate repairs on a set frequency. Unplanned outages are documented as corrective workorders for repairs. CIP projects typically have meetings due to the complexity of the project and a (Notice of Operational Impact (NOI).

9. *When will this system be operational again?*

Answer:
The system has been flushed and the pump verified as operational. Staff will need to perform a conditional assessment of the equipment to verify that the pump remain operational after the storage tank has been filled with fresh potassium permanganate.

III. April Chemical Release

10. Could you provide a full chemical report of the April 27 incident, including all substances released, estimated quantities, and concentrations?

Answer:

Prior to water flowing into the fluoride storage tank, there was approximately 65,400 pounds of hydrofluorosilicic acid (fluoride) in the tank, which equates to about 5,900 gallons of fluoride solution. Approximately 3,300 gallons of water was added to the storage tank. The highest concentration of fluoride sampled in any distribution system was 3.86 mg/L.

11. What equipment malfunction led to this incident, and what safeguards are now in place to prevent recurrence?

Answer:

No equipment malfunction led to this incident. Maintenance staff failed to isolate the storage tank prior to performing maintenance and operations staff failed to notify leadership of this incident in a timely manner. Several system improvements were incorporated to prevent a reoccurrence.

The following corrective actions were accepted by VDH.

- Daily samples of fluoride residuals are now taken regardless of system status. Approval for discontinuing any sample requires DPU Director approval.
- Refresher training on lock-out/tag-out given to maintenance staff.
- Replaced fluoride analytical equipment and calibrated with an upper limit of 10.0 mg/l.
- Reprogramed SCADA to display the same range as the fluoride analytical equipment and installed probes (0.0 mg/L to 10.0 mg/L). Alarms are in SCADA for 2.0 mg/L and 4.0 mg/L concentration levels (the secondary and maximum contaminant exceedance levels).
- Lab manager revised dilution procedure, reposted, and completed initial demonstration of competency for all operators.
- Instituted a requirement for maintenance staff to verify with operator and for the operator to create a log entry into the operator logbook by the operator prior to performing any maintenance activity.
- Fluoride system upgrade is currently under design. Final design specifications will be completed by December 2025 with construction completed in 2026. The new system will be moved out of the basement at an elevation above the existing fluoride storage tank. As part of the design flow meters and alarms will be incorporated.
- Communication SOP.

IV. Current Boil Water Advisory (May 27, 2025)

12. What is the department's current understanding of the root cause of the filter clogging event?

Answer:

There are two primary causes:

- Maintenance not occurring in a timely fashion on plate settlers in the sedimentation basins.
- Poor raw water quality coming into the system.

13. Can you share the timeline of when city and state officials became aware of any related filtration or maintenance issues, including the plate settler sludge noted in the May 12 work order which was reported in the news?

Answer:

Shortly after midnight on May 26th, on the morning of May 27th plant staff informed regional partners and VDH that the plant was experiencing operational issues and the filters were clogged. The plants were operating at reduced capacity, and regional partners were asked to reduce demands. Senior leaders within DPU were notified at approximately the same time with staff on route to the plant to determine recovery time and impact. City Administration was notified at approximately 4:00 am of current status. Status was updated throughout the event and information was sent to the public via press releases as conditions changed. Immediate attention was given to recovery of the plant. The maintenance discussion regarding plate settlers was discussed with VDH as part of the coordinated review after pressure had been restored in the system the evening of the 27th. In subsequent days, VDH concurred with that assessment and will be providing a report of their own.

14. Which chemicals are used for coagulation and flocculation? Have these chemicals been in uninterrupted use while the oxidation system has been down?

Answer:

Alum, yes.

15. Could earlier events (including the April chemical release and the oxidation system outage) have contributed to increased filter stress or sludge buildup?

Answer:

No, fluoride is added downstream in the treatment process and the potassium permanganate did not have an impact.

16. Please share any water quality lab results or reports from before and after the May 27 incident so we can better assess water safety throughout this period.

Answer:
See separate attachments.

V. Oversight and Communication

17. How is operational information, such as equipment outages or treatment process changes, escalated to department and city leadership?

Answer:

There is a DPU Executive Leader at each primary location daily, operational information is shared as an impact is identified. Once an operational impact is determined the DPU Director determines if there is a need to communicate with city leadership. This coordination is done through the offices of the Mayor, CAO, and Strategic Communications.

18. Are there planned changes to how the department communicates with the public on matters of water safety and treatment reliability?

Answer:

DPU plans to continue to push need to know information to the public in a timely manner.