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Audit of GSA's Response to COVID-19: PBS Faces Challenges to Ensure Water Quality in GSA- Controlled Facilities

Report Number A201018/P/4/R24005
July 22, 2024

Executive Summary

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Why We Performed This Audit

In April 2020, we began monitoring the actions GSA took in response to the nationwide public health emergency resulting from Coronavirus Disease 2019 (COVID-19) and GSA's implementation of the Coronavirus Aid, Relief, and Economic Security Act. During our monitoring efforts, we learned that decreased water usage resulting from building closures or occupancy reductions in GSA-controlled (i.e., owned and leased) facilities can create hazards for returning occupants, such as an increased risk of exposure to lead, copper, *Legionella* bacteria, and other contaminants. As a result, we included this audit in our *Fiscal Year 2022 Audit Plan*.

Our audit objective was to determine whether GSA has implemented Centers for Disease Control and Prevention (CDC) and U.S. Environmental Protection Agency (EPA) guidance, as well as GSA policies and guidance, to ensure safe drinking water in GSA-controlled facilities after reduced occupancy due to the COVID-19 pandemic.

What We Found

Since the onset of the COVID-19 pandemic, many GSA buildings have experienced extended periods of reduced or no occupancy. During these periods, decreased water usage can cause water in the building systems to become stagnant. This may allow hazardous contaminants like lead, copper, or *Legionella* bacteria to accumulate.

To address the risk of water stagnation arising from the COVID-19 pandemic, GSA's Public Buildings Service (PBS) developed water safety guidance that was designed to include recommendations from the CDC and EPA.¹ PBS relied extensively upon its operations and maintenance (O&M) contractors to implement the water safety activities set forth in the PBS water safety guidance. However, we found that PBS did not consistently incorporate these water safety activities into O&M contracts or provide the necessary oversight to ensure that the O&M contractors performed the activities.

We also found that PBS did not follow its requirements for periodic testing for lead and copper in water outlets in GSA child care centers. GSA closed the majority of its child care centers during the COVID-19 pandemic. However, PBS did not test the water in many of these centers

¹ See *PBS's 2020 and 2021 Water Safety Guidance Issued in Response to COVID-19* on page 5 for the complete list of PBS water safety guidance.

for months or years after reopening them. Once performed, tests identified hazardous levels of lead and copper in outlets at some GSA child care centers.

Finally, we found that PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance were flawed.² Specifically, PBS's *Drinking Water Quality Management* policy did not fully incorporate CDC and EPA recommendations on maintaining water quality or testing for contaminants during periods of reduced or no occupancy. Additionally, the PBS water safety guidance did not include clear requirements for flushing and checking disinfectant levels, which can be a key indicator of water stagnation in building systems.

What We Recommend

We recommend that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by:

1. Defining roles and responsibilities for maintaining water quality in GSA-controlled facilities.
2. Ensuring that:
 - a. Water quality is maintained through consistent policies and practices nationwide;
 - b. Deviations to PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance are approved by PBS's Central Office; and
 - c. Any water safety policies or guidance developed by regional offices do not contradict policies and guidance issued at the national level.
3. Ensuring that PBS's water safety activities are incorporated into O&M contracts, recorded in PBS's National Computerized Maintenance Management System, and overseen by PBS personnel.
4. Incorporating PBS's water safety oversight responsibilities into quality assurance surveillance plans for O&M contracts to ensure contractor compliance with water safety activities.
5. Ensuring that PBS personnel and O&M contractors have access to tenant spaces so flushing can be performed.

² During our audit fieldwork, GSA Order PBS 1000.7, *Drinking Water Quality Management* (September 13, 2016) and companion *Desk Guide for Drinking Water Quality Management* (September 12, 2016) were in effect. This policy was scheduled to expire on September 13, 2023. On September 8, 2023, PBS extended the policy to expire on March 31, 2024. On November 16, 2023, PBS cancelled the policy, replacing it with GSA Order PBS 1000.7A, *Drinking Water Quality Management*, which included an updated companion *Desk Guide for Drinking Water Quality Management*. This report is based on the 2016 policy in effect during our audit fieldwork; however, we discuss the new policy in the **Background** section of this report.

6. Amending O&M and other contracts to ensure that energy efficiency and water conservation requirements do not conflict with PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance.
7. Ensuring that water is tested in GSA's child care centers as required by PBS's *Drinking Water Quality Management* policy.
8. Ensuring water quality test results—especially those above EPA action levels—are communicated timely to building tenants, GSA child care center operators, and parents and guardians of affected children.
9. Amending and implementing PBS's *Drinking Water Quality Management* policy to:
 - a. Include reduced occupancy or decreased water usage as additional criteria for lead, copper, *Legionella* bacteria, and other contaminant testing;
 - b. Ensure requirements in PBS's *Drinking Water Quality Management* policy, its companion *Desk Guide for Drinking Water Quality Management*, and the PBS water safety guidance are incorporated into the amended policy, unless there are safety reasons why such requirements cannot or should not be incorporated; and
 - c. Formalize its requirement to complete additional testing at child care centers that close for extended periods of time.

The PBS Commissioner agreed with the report recommendations. PBS's response can be found in its entirety in **Appendix B**.

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Introduction

We performed an audit of GSA’s activities to ensure water quality in GSA-controlled facilities after the Coronavirus Disease 2019 (COVID-19) nationwide public health emergency.

Purpose

In April 2020, we began monitoring the actions GSA took in response to the nationwide public health emergency resulting from COVID-19 and GSA’s implementation of the Coronavirus Aid, Relief, and Economic Security Act. During our monitoring efforts, we learned that decreased water usage resulting from building closures or occupancy reductions in GSA-controlled (i.e., owned and leased) facilities can create hazards for returning occupants, such as an increased risk of exposure to lead, copper, *Legionella* bacteria, and other contaminants. As a result, we included this audit in our *Fiscal Year 2022 Audit Plan*.

Objective

Our audit objective was to determine whether GSA has implemented Centers for Disease Control and Prevention (CDC) and U.S. Environmental Protection Agency (EPA) guidance, as well as GSA policies and guidance, to ensure safe drinking water in GSA-controlled facilities after reduced occupancy due to the COVID-19 pandemic.

See **Appendix A** – Objective, Scope, and Methodology for additional details.

Background

GSA owns and leases over 363 million square feet of space in 8,397 buildings in the United States. GSA is responsible for providing “a safe and healthful work environment for Federal employees and the visiting public.”³ Among other responsibilities, GSA’s Public Buildings Service (PBS) must ensure its buildings have safe drinking water.

In 2016, PBS issued its *Drinking Water Quality Management* policy, which was intended to ensure consistent access to safe, quality drinking water for consumption and use by all occupants, contractors, and visitors in GSA-controlled facilities. The policy states that the majority of GSA-controlled buildings receive drinking water from public water systems. However, it adds that drinking water quality can be influenced by a building’s plumbing system design and condition, and maintenance and operation practices, among other circumstances.

³ 41 C.F.R. 102-80.10, *What are the basic safety and environmental management policies for real property?*.

Risks to Water Safety Arising from Decreased Water Usage

In March 2020, the Office of Management and Budget directed heads of departments and agencies to maximize telework to slow down the transmission of COVID-19.⁴ As agencies complied with the Office of Management and Budget's direction, many GSA buildings experienced extended periods of reduced or no occupancy. During periods of reduced or no occupancy, decreased water usage can cause water in building systems to become stagnant. According to EPA guidance, stagnant water can become unsafe to drink or otherwise use for domestic or commercial purposes.⁵ Stagnant water increases the risk of corrosion in the plumbing system, which can trigger the release of lead, copper, and other contaminants into the facility's drinking water. It also can increase the risk of growth and spread of bacteria, including *Legionella*. These risks are described below:

- **Lead** – According to the EPA, lead can affect almost every organ and system in the human body. Children are especially susceptible to the effects of lead because their bodies are still developing. The EPA notes that even low blood levels of lead in children can cause behavioral and learning problems, hyperactivity, reduced intelligence, impaired growth, hearing problems, and anemia.⁶ Adults also can suffer health effects from lead exposure, including increased blood pressure, decreased kidney function, and reproductive problems. The EPA has established a lead action level of 15 parts per billion (ppb), which requires water systems to take action and notify each person served by the system if lead levels exceed 15 ppb.⁷ Because lead has no taste or smell, the EPA stresses the need for regular testing of drinking water to identify lead contamination.
- **Copper** – Although an essential nutrient in very small amounts, excess copper can be dangerous. Levels of copper exposure above the action level can cause vomiting, nausea, abdominal pain, and diarrhea. Long-term exposure to copper can lead to severe illnesses, such as kidney and liver damage. The EPA has established an action level for copper of 1,300 ppb.⁸
- **Legionella** – *Legionella* bacteria (*Legionella*) is the primary cause of Legionnaires' disease, a potentially fatal illness involving pneumonia. Legionnaires' disease is the leading cause of reportable waterborne disease outbreaks in the United States, affecting

⁴ Office of Management and Budget Memorandum M-20-16, *Federal Agency Operational Alignment to Slow the Spread of Coronavirus COVID-19* (March 17, 2020).

⁵ EPA, *Maintaining or Restoring Water Quality in Buildings with Low or No Use* (July 2020, Version 3).

⁶ Anemia is a condition that occurs when the body lacks enough healthy red blood cells. It can cause fatigue, shortness of breath, dizziness, headaches, or an irregular heartbeat.

⁷ 40 C.F.R. 141.80(c), *Lead trigger level, lead action level, and copper action level*.

⁸ 40 C.F.R. 141.80(c).

between 52,000 and 70,000 people each year and often requiring hospitalization. People can contract Legionnaires' disease if they inhale water droplets containing *Legionella* or if contaminated water enters the lungs while drinking. Although cases of Legionnaires' disease are generally mild in children, people 50 years or older, current or former smokers, and people with chronic lung disease or weakened immune systems are at increased risk.

According to the CDC, there is no safe level of *Legionella* in drinking water. However, the CDC's *Toolkit for Controlling Legionella in Common Sources of Exposure* provides ranges of *Legionella* concentration to be used as performance indicators.⁹ The ranges for potable (drinking) water are:¹⁰

- *Uncontrolled* (≥ 10 colony-forming units/milliliter (CFU/mL));
- *Poorly controlled* (1 to 9.9 CFU/mL); and
- *Well controlled* (detectable to 0.9 CFU/mL).

Addressing Risks to Water Safety

In response to COVID-19 and the risks to water safety described above, both the CDC and EPA issued guidance related to water quality in buildings with reduced or no water use. The CDC recommends checking for hazards such as lead, copper, *Legionella*, and other contaminants before reopening buildings after a prolonged period of inactivity.¹¹ Similarly, the EPA recommends that building owners and managers take proactive steps to protect public health by minimizing water stagnation during closures and taking actions to address water quality prior to reopening.¹² As described below, both the CDC and EPA recommend the following actions to address water safety risks:

- **Flushing Water Systems** – The CDC and EPA recommend regular flushing of plumbing systems during building closures and periods of reduced use. Flushing consists of running water through pipes, fountains, faucets, and other water outlets.¹³ Regular

⁹ January 13, 2021.

¹⁰ Potable water, also known as drinking water, comes from surface and ground sources and is treated to levels that meet state and federal standards for consumption.

¹¹ CDC, *Guidance for Reopening Buildings After Prolonged Shutdown or Reduced Operation* (updated September 22, 2020). The CDC explains that for lead and copper, a "prolonged period" may be hours, days, weeks, or months; for *Legionella*, a "prolonged period" may be weeks or months, depending on a range of factors.

¹² EPA, *Maintaining or Restoring Water Quality in Buildings with Low or No Use*.

¹³ PBS's companion *Desk Guide for Drinking Water Quality Management* (September 12, 2016) defines drinking water outlets as "building fixtures which provide water intended for consumption, including drinking water fountains, concession water outlets, water faucets used as sources of drinking water (e.g., faucets in kitchens,

flushing ensures that any stagnant water is removed and that fresh water is circulated throughout a building's plumbing system. Flushing also helps to limit corrosion in pipes and outlets, which reduces the risk of metal contaminants leaching into the water.¹⁴

- **Checking Chlorine Levels** – The CDC recommends checking disinfectant levels to ensure the risk of bacterial growth is minimized. Most public water systems add chlorine to the water supply as a primary disinfectant to reduce the risks from harmful bacteria like *Legionella*. According to the CDC, stagnant water can lead to low levels of chlorine, causing a loss of its disinfectant properties. Chlorine is typically measured in parts per million (ppm) and can be checked rapidly in buildings using low-cost test strips, chemical testing kits, or digital testing instruments. Chlorine level checks can confirm the presence of disinfectant. Higher chlorine levels suggest that the water was treated by a public water system more recently and is therefore less likely to have stagnated.
- **Maintaining Water Heaters at a Temperature of at Least 140 Degrees Fahrenheit** – According to the CDC, *Legionella* generally grows best between 77–113 degrees Fahrenheit. *Legionella* growth slows and the bacteria begins to die at water temperatures between 113–120 degrees Fahrenheit. However, chlorine degrades more rapidly in higher temperatures, and as it decays, it loses its ability to keep water safe from contaminants like *Legionella*. Therefore, to ensure that hot water remains safe, the CDC recommends that water heaters are set to at least 140 degrees Fahrenheit and hot water at the tap is at or above 120 degrees Fahrenheit. This temperature is hot enough to prevent the growth of *Legionella*.

PBS's 2016 Drinking Water Quality Management Policy

PBS's 2016 *Drinking Water Quality Management* policy requires PBS to test drinking water for contaminants under the following circumstances:

- In response to complaints;
- In response to emergencies (such as a flood);
- In response to construction activities; and
- When buildings are new, renovated, or modernized.

The policy also requires regular drinking water testing for lead and copper in all GSA child care centers every 3 years. However, it does not require regular drinking water testing in other GSA-controlled space. The PBS Office of Facilities Management (OFM), Office of Design and Construction, and Office of Real Property Asset Management are responsible for supporting and/or implementing the policy.

lunch/break areas, meeting areas, and others), and water sources used for food preparation including cooking of food and cleaning of food, utensils, containers, and cooking products.”

¹⁴ Corrosion is a chemical reaction that dissolves or wears away metal from pipes and fixtures.

PBS's 2020 and 2021 Water Safety Guidance Issued in Response to COVID-19

On May 22, 2020, in response to COVID-19, PBS issued *GSA Building Managers and LAMs [Lease Administration Managers] Readiness Guidance: Operations and Maintenance Reopening Guidance for Buildings that have been Idle*, to Facilities Management and Services Programs and Service Center directors. This document provided guidance for the delivery of operations and maintenance (O&M) services to help protect and mitigate the spread of COVID-19 in GSA-controlled facilities. To protect against bacteria contamination caused by stagnant water, the guidance called for weekly flushing of all unused drinking water faucets, sinks, showers, toilets, and other domestic water appliances. It also provided guidance to set water heaters to a temperature of at least 140 degrees Fahrenheit. This guidance was intended to be a “living document” and was continually updated throughout the pandemic as new information became available from the CDC and EPA. For example:

- On June 10, 2020, the guidance was updated to include a draft of the *Federal Building Re-occupancy Preparation – Water System Guidance*, which provided that reductions in water use increase the risk for *Legionella* growth throughout a building. It recommended that PBS partner with O&M contractors to have a flushing plan to prepare buildings for re-occupancy.
- On October 30, 2020, PBS updated the guidance to only require weekly flushing in buildings with less than 50 percent occupancy. PBS also added a requirement to perform weekly spot-checking of chlorine levels in 10 percent of the outlets in buildings where flushing was required.
- On December 22, 2020, PBS updated the guidance to incorporate water safety activities into O&M contracts, including flushing water systems, checking chlorine levels, and checking the temperature in water heaters, where necessary. PBS also established a chlorine detection level of 0.2 ppm. Additionally, PBS required O&M contractors to document all water safety activities in PBS's National Computerized Maintenance Management System (NCMMS), which stores information on each building's maintenance activities.
- On November 4, 2021, and November 22, 2021, PBS's former OFM Assistant Commissioner emailed Facilities Management and Services Programs and Service Center directors, stating that “flushing frequency can be reduced and eventually discontinued as long as spot checks (for chlorine and hot water temperature) confirm that the water has not stagnated” and that “flushing can be discontinued completely once a building has returned to pre-pandemic occupancy levels.”

PBS's 2023 Drinking Water Quality Management Policy

On November 16, 2023, PBS issued an updated *Drinking Water Quality Management* policy.¹⁵ The policy requires PBS to test drinking water for contaminants such as lead, copper, and bacteria under the following circumstances:

- All newly installed water outlets primarily designed for human consumption (e.g., drinking fountains, bottle fillers, and faucets in kitchenettes);
- When replacing building service lines and primary pipes (e.g., riser and headers);
- When a water system plans to partially replace a lead service line that provides drinking water to a facility; and
- In response to incidents, complaints, and emergencies, an investigation may include testing to confirm the presence of a drinking water issue.

The policy also incorporated an updated *PBS Guidance to Maintain and Restore Water Quality* which requires monthly testing for disinfectant in drinking water in GSA-controlled space when the building meets certain size criteria. In addition, the policy requires that drinking water must be tested in all GSA child care centers on an annual basis. Additional testing is required when a child care center is closed for 30 days or more and after new water outlets are installed in a child care center.

The PBS OFM's Facility Risk Management Division is responsible for issuing and updating the policy and for providing training and support to the regional program offices for drinking water program management activities.

PBS issued this policy after completion of our audit fieldwork; therefore, we did not evaluate its implementation or effectiveness during the course of our audit.

GSA Office of Inspector General Memorandums on Water Safety in PBS Buildings

Our office has issued two memorandums addressing water safety in GSA-controlled facilities:

- On September 6, 2022, we issued an alert memorandum to notify the PBS Commissioner that PBS did not effectively test for water contamination prior to reopening GSA child care centers that were closed during the COVID-19 pandemic.¹⁶ We found that PBS did not test 57 of 92 open GSA child care centers (62 percent) within the 3-year requirement established by PBS's *Drinking Water Quality Management* policy. As a result, water users in these GSA child care centers may have been at increased risk of exposure to hazardous contaminants.

¹⁵ GSA Order PBS 1000.7A.

¹⁶ *Alert Memorandum: PBS Did Not Test Water Prior to Reopening GSA Child Care Centers Closed During the COVID-19 Pandemic* (Memorandum Number A201018-8).

- On September 20, 2023, we issued an alert memorandum to notify the PBS Commissioner that PBS must take immediate action to address the risk of *Legionella* contamination in water systems across GSA-controlled buildings.¹⁷ In July and August 2023, elevated levels of *Legionella* were detected in water at six GSA-controlled buildings located across four different GSA regions. *Legionella* levels in one building's drinking water were 640 times above levels that the CDC considers to be *uncontrolled* for potable (drinking) water. At least one person who worked in one of the six GSA-controlled buildings was diagnosed with Legionnaires' disease.¹⁸ Current reduced building occupancy levels can lead to water stagnation, which provides ideal conditions for the growth and spread of *Legionella* and increases the likelihood that additional GSA-controlled buildings may have contaminated water.

¹⁷ Alert Memorandum: *PBS Must Take Immediate Action to Address the Risk of Legionella Contamination in GSA-Controlled Buildings* (Memorandum Number A230072-1).

¹⁸ Since our alert memorandum was issued, GSA learned of a confirmed case of Legionnaire's disease linked to the 985 Michigan Avenue Federal Building in Detroit, Michigan.

Results

Since the onset of the COVID-19 pandemic, many GSA buildings have experienced extended periods of reduced or no occupancy. During these periods, decreased water usage can cause water in the building systems to become stagnant. This may allow hazardous contaminants like lead, copper, or *Legionella* bacteria to accumulate.

To address the risk of water stagnation arising from the COVID-19 pandemic, PBS developed water safety guidance that was designed to include recommendations from the CDC and EPA. PBS relied extensively upon its O&M contractors to implement the water safety activities set forth in the PBS water safety guidance. However, we found that PBS did not consistently incorporate these water safety activities into O&M contracts or provide the necessary oversight to ensure that the O&M contractors performed the activities.

We also found that PBS did not follow its requirements for periodic testing for lead and copper in water outlets in GSA child care centers. GSA closed the majority of its child care centers during the COVID-19 pandemic. However, PBS did not test the water in many of these centers for months or years after reopening them. Once performed, tests identified hazardous levels of lead and copper in outlets at some GSA child care centers.

Finally, we found that PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance were flawed. Specifically, PBS's *Drinking Water Quality Management* policy did not fully incorporate CDC and EPA recommendations on maintaining water quality or testing for contaminants during periods of reduced or no occupancy. Additionally, the PBS water safety guidance did not include clear requirements for flushing and checking disinfectant levels, which can be a key indicator of water stagnation in building systems.

Finding 1 – PBS did not consistently incorporate water safety activities into its O&M contracts or provide the necessary oversight to ensure that the O&M contractors performed the activities.

We found that PBS did not consistently incorporate water safety activities into its O&M contracts. In some cases, PBS regions either deviated from the PBS water safety guidance or did not implement it at all. We also found that PBS did not provide the necessary oversight to ensure that O&M contractors performed the required water safety activities.

These deficiencies are described in detail below.

PBS Did Not Consistently Incorporate Water Safety Activities into Its O&M Contracts

In a December 2020 update to the PBS water safety guidance, PBS required the incorporation of water safety activities into O&M contracts. These activities included flushing water systems, checking for chlorine, and checking the temperature of hot water “where needed/necessary.”

Of the three PBS regions we tested, only PBS's Great Lakes Region (PBS Region 5) generally incorporated water safety activities into O&M contracts. PBS's Southeast Sunbelt Region (PBS Region 4) and National Capital Region (PBS NCR) either incorporated water safety activities in O&M contracts to different standards or did not incorporate them at all.

- **PBS Region 5** – For four of the five PBS Region 5-owned buildings we sampled, PBS Region 5 modified its O&M contracts to incorporate the required water safety activities by April 2021. PBS Region 5 provided these O&M contractors with additional funding to perform the water safety activities and to document the activities in NCMMS.

When we visited these five buildings in June 2022, we confirmed that O&M contractors had performed flushing, tested for chlorine, and maintained most water heaters at or near a temperature of 140 degrees Fahrenheit in all five buildings. In the PBS Region 5 O&M contract that was not modified—the U.S. Courthouse in Hammond, Indiana—the O&M contractor was performing similar water safety activities as the other four PBS Region 5 contracts and documenting the activities in NCMMS. The PBS property manager told us that they did not modify the O&M contract to provide additional funding because the building was “too small to pay extra.”

- **PBS Region 4** – Whereas the PBS water safety guidance required weekly flushing and testing chlorine in water systems, PBS Region 4 only required its O&M contractors to perform a one-time flush in March 2021 in buildings with less than 50 percent occupancy. According to PBS Region 4 officials, this was an interim step until O&M contracts could be modified. However, the O&M contracts for the four PBS Region 4-owned buildings we sampled were not modified until between February and July 2022, almost a year later, and none included additional funding to perform water safety activities.

Additionally, once PBS Region 4 incorporated water safety activities into the contracts, O&M contractors were only required to perform flushing and testing when occupancy levels of individual floors in a building were less than 10 percent. In contrast, the PBS water safety guidance required flushing and testing when occupancy levels fell below 50 percent for the entire building. As a result, none of the PBS Region 4 buildings we sampled were following the PBS water safety guidance. For example:

- **Peachtree Summit Federal Building, Atlanta, Georgia** – PBS Region 4 modified the O&M contract in July 2022. When we visited the building in September 2022, the O&M contractor told us they were flushing 10 percent of the outlets of each floor each week. However, only two monthly flushing logs were provided—one showed flushing for 2 days in 2021, and one showed flushing for 1 day in 2022—and neither was entered in NCMMS.
- **Martin Luther King, Jr. Federal Building, Atlanta, Georgia** – PBS Region 4 modified the O&M contract in July 2022. The building manager provided us with

a PBS Region 4 checklist, dated May 10, 2022, titled *Building Operations COVID-19 Response Plan*. The O&M contractor told us the checklist “had to be complete before people were allowed to come back to the building.” Among other things, the checklist called for a complete flush of the domestic water systems, including toilets, faucets, drinking fountains, sink drains, and floor drains. However, we could not confirm these actions were taken because they were not entered in NCMMS.

- **G.W. Andrews Federal Building and U.S. Courthouse, Opelika, Alabama** – PBS Region 4 modified the O&M contract in February 2022. When we visited the building in September 2022, the PBS Region 4 O&M contracting officer’s representative (COR) told us that they flushed “pretty much every morning” to keep the “light brown sediment out of the piping.” The COR added that there was no need to provide the O&M contractor with additional funding for flushing because it is “a smaller building which they flush anyway.” However, we could not confirm these actions were taken because they were not entered in NCMMS. The COR and the PBS Region 4 building manager told us chlorine levels had never been tested because the building is “on city water.”

When we asked PBS Region 4 management why they chose to deviate from the PBS water safety guidance, they told us that the guidance was “a large task ... very unpopular from the get-go,” that the guidance was a “suggestion,” and that there was “pushback” about the costs from PBS Region 4’s energy group.

- **PBS NCR** – PBS NCR management told us that reduced occupancy levels led to workload reductions for O&M contractors, which should have enabled the contractors to “repurpose” their time under existing contracts to conduct water safety activities, such as flushing. Accordingly, PBS NCR did not modify the O&M contracts for the four PBS NCR-owned buildings we sampled to incorporate water safety activities. Regional management also told us that O&M contractors should have requested additional funding if they were unable to repurpose time. They added that the PBS NCR service centers “should have known ... to modify the contracts” if they were not getting those services.

Because PBS NCR did not modify the O&M contracts for the four PBS NCR-owned buildings in our sample, we could not confirm that O&M contractors were following the PBS water safety guidance during our September 2022 site visits. For example:

- **Ariel Rios Federal Building, Washington, D.C.** – The O&M contractor told us that because the building has rusty, galvanized pipes, they had been flushing prior to the COVID-19 pandemic to keep the water from being discolored. However, the flushing logs in NCMMS did not include flushing locations, water temperatures, pre- and post-flushing chlorine levels, or flush duration. The logs only listed the dates that flushing and testing were completed in the building. Because of this,

we determined that flushing was not done to the standard prescribed in the PBS water safety guidance. The O&M contractor also told us they set water heaters to 120 degrees Fahrenheit. This is contrary to the 140 degrees Fahrenheit prescribed in the PBS water safety guidance.

- **Ronald Reagan Building and International Trade Center, Washington, D.C. –** The PBS NCR senior property manager asked the O&M contractor for flushing records by email, stating that this will “come up with the repopulation of the Building” and there will “likely [be an] IG audit.” The O&M contractor replied that flushing most faucets was not possible “without disassembly of the system. Automatic flush valves and faucets were installed without bypasses to allow for flushing.” The PBS NCR senior property manager shared the email with the COR, and said, “I am not real [*sic*] happy with this answer.” Flushing work orders were entered in NCMMS between January and November 2021; however, there were no records in NCMMS showing that the O&M contractor performed the work. The PBS NCR senior property manager provided us a document showing that EPA locations were flushed and tested for chlorine on August 26, 2022. Two days prior to flushing, the O&M contractor noted that the water in the EPA location was “discolored and with slight stagnant odor.”

A former OFM official told us that PBS regions are responsible for implementing water safety guidance, including verifying that O&M contractors perform flushing, check for chlorine, and check the temperature of hot water. However, as shown in the examples above, two of the PBS regions we sampled either deviated from the PBS water safety guidance or did not implement it at all.

PBS Did Not Provide the Necessary Oversight to Ensure That O&M Contractors Performed the Required Water Safety Activities

The PBS water safety guidance, updated in December 2020, recommends that O&M contractors document “all water activities,” including flushing, chlorine checks, and temperature checks of hot water, in NCMMS. However, PBS did not provide the necessary oversight to ensure that O&M contractors performed and documented these activities when necessary.

PBS did not perform adequate quality assurance activities to ensure O&M contractors performed water safety activities. PBS awards O&M contracts as performance-based service contracts. Under this type of contract, the government provides measurable performance standards (i.e., in terms of quality, timeliness, quantity, etc.) and the method of assessing contractor performance against performance standards.¹⁹ For this type of contract, Federal Acquisition Regulation (FAR) 37.604, *Quality assurance surveillance plans*; and FAR 46.401(a),

¹⁹ Federal Acquisition Regulation 37.601(b)(2), *General*.

General, require the government to perform quality assurance to ensure that contractor-provided products or services conform with contract requirements.

According to the FAR, agencies should use quality assurance surveillance plans (QASPs) that align with the contract statement of work. QASPs should specify the work requiring surveillance, as well as the method of surveillance. For services performed at GSA buildings, such as those services performed under PBS's O&M contracts, quality assurance would typically include physical inspections of work performed.²⁰

PBS CORs develop QASPs and perform inspections to ensure that O&M contractors provide required services. All PBS regions we sampled told us that O&M contractors were performing water safety activities. For the 13 GSA-owned buildings we sampled, five O&M contract QASPs included drinking water system surveillance activities. However, for those contracts, the QASPs only included general language regarding meeting drinking water standards and did not identify specific water safety activities for reduced occupancy and decreased water usage.

PBS CORs and building management provided varying reasons why they did not incorporate specific water safety activities into their QASPs. Some told us that contracts were awarded and QASPs were developed before PBS's water safety guidance was issued. However, without this detailed oversight procedure, PBS cannot ensure that O&M contractors perform and document water safety activities in accordance with the PBS water safety guidance and contract requirements.

PBS did not provide necessary support to O&M contractors that were not able to fully implement the PBS water safety guidance. O&M contractors were not always able to fully implement the PBS water safety guidance. In some cases, tenant agencies prevented O&M contractors from accessing their space to conduct flushing and testing. In other cases, O&M contractors told us that the PBS water safety guidance conflicted with the terms of their contracts.

O&M contractors were prevented from accessing space to conduct flushing and testing by tenant agencies. In 6 of the 13 GSA-owned buildings we sampled, O&M contractors told us they could not complete flushing and testing because tenant agencies denied them access to the tenant's space. For example:

- **Everett M. Dirksen U.S. Courthouse, Chicago, Illinois; and the Cosmos Club, Washington, D.C.** – O&M contractors told us that some federal judges would not allow them into their chambers to conduct the flushing. One O&M contractor told us that an O&M contractor employee was detained for going into a judge's private chambers. The other O&M contractor told us that judges did not want the O&M contractor in their chambers due to the transmission risk of COVID-19.

²⁰ FAR 46.403, *Government contract quality assurance at destination*.

- **U.S. Courthouse, Hammond, Indiana** – The O&M contractor told us they could not flush in tenant spaces because tenants did not have enough on-site staff to escort the contractor personnel. The O&M contractor further told us that PBS never told them “what to do in those escort-only” spaces.

OFM officials admitted that there are access issues into certain tenant spaces. The director of OFM’s Facility Risk Management Division told us that “there are judges’ private chambers where they don’t let you in. You could tell them that you need to go in there and flush and they won’t let you.” However, PBS is responsible for maintaining a healthful and safe environment in its buildings. Accordingly, PBS should have worked with the tenants to ensure that the O&M contractors were able to perform the required water safety activities.

Water temperature requirements under the PBS water safety guidance contradicted O&M contract requirements. The PBS water safety guidance provides that water heaters should maintain a temperature of at least 140 degrees Fahrenheit. However, the O&M contractor at the Ronald Reagan Building and International Trade Center did not comply with this requirement because it contradicted the water temperature requirement included in its O&M contract.

The O&M contract for the Ronald Reagan Building and International Trade Center included conflicting water heater temperature requirements of 115 degrees and 120 degrees Fahrenheit—both of which fell below the PBS water safety guidance requirement to maintain a temperature of at least 140 degrees Fahrenheit. According to the O&M contractor, water temperature is set according to the energy efficiency requirements in its contract.

In sum, PBS cannot ensure water in its buildings is safe because PBS did not consistently incorporate water safety activities into O&M contracts or provide necessary oversight to ensure that the O&M contractors performed these activities. PBS should address these deficiencies by defining roles and responsibilities of its national and regional staff in the implementation of water safety policies and guidance. PBS also should maintain consistent practices nationwide, incorporate water safety activities into O&M contracts, record activities in NCMMS, and ensure activities are routinely reviewed by PBS personnel. Lastly, PBS should incorporate oversight responsibilities into its QASPs for O&M contracts, ensure that PBS personnel and O&M contractors have access to tenant spaces to perform water safety activities, and amend O&M and other contracts to ensure energy efficiency and water conservation requirements do not conflict with PBS’s water safety policies and guidance.

Finding 2 – PBS did not follow its requirements for periodic testing for lead and copper in water outlets in GSA child care centers.

In our September 6, 2022, alert memorandum, we notified the PBS Commissioner that PBS did not effectively test for water contamination prior to reopening GSA child care centers that were closed during the COVID-19 pandemic. Although PBS has since completed water testing at all

GSA child care centers, we found that the testing did not always comply with its *Drinking Water Quality Management* policy. Specifically, PBS did not comply with the policy’s requirements to:

- Test all water outlets in GSA child care centers for lead and copper every 3 years; and
- Conduct annual testing of water outlets if previous testing detected elevated lead levels and the child care center is located in a building that is more than 25 years old.

These deficiencies are described below.

PBS Did Not Test All Water Outlets in GSA Child Care Centers for Lead and Copper Every 3 Years

PBS’s *Drinking Water Quality Management* policy requires PBS to test all water outlets in GSA child care centers for lead and copper every 3 years. However, we found that PBS neither tested all the water outlets nor conducted the testing within the 3-year requirement.

PBS did not test all water outlets in GSA child care centers. In our September 6, 2022, alert memorandum, we reported that PBS had not tested water in 33 GSA child care centers as of June 2022. Although PBS subsequently tested water in each of these child care centers, it did not comply with its *Drinking Water Quality Management* policy’s requirement to test all water outlets in GSA child care centers.

In some GSA child care centers, PBS hired the U.S. Department of Health and Human Services’ Federal Occupational Health (FOH) to test the water outlets but specified that FOH would only test a maximum of 13 outlets at each center. PBS told us this was necessary to obtain “standardized pricing.” However, when we visited three child care centers that were tested by FOH, we observed that each had more than 13 water outlets, as shown in *Figure 1* below.

Figure 1 – Number of Water Outlets in Child Care Centers

Building	Location	Number of Water Outlets in the Child Care Center
Park Place Building	Seattle, Washington	22
Sam Nunn Atlanta Federal Center	Atlanta, Georgia	46
Internal Revenue Southwest Service Center	Austin, Texas	31

Therefore, many water outlets in these GSA child care centers were not tested. As a result, PBS did not meet its requirement to test all the water outlets in GSA child care centers.

PBS did not test the water in GSA child care centers every 3 years. As we reported in our September 6, 2022, alert memorandum, PBS did not test the water outlets in 57 of 92 open GSA child care centers (62 percent) within the 3-year requirement established by PBS's *Drinking Water Quality Management* policy. Once the child care centers were tested, test results showed that 20 of the 91 child care centers (22 percent) had water outlets with lead or copper above EPA action levels.²¹ Moreover, we found that after PBS tested the water at 28 child care centers, it took more than 25 days to provide the test results to the child care centers. During these delays, the water outlets in the child care centers remained operational. For example:

- **Park Place Building, Seattle, Washington** – According to PBS, the child care center closed on March 16, 2020, and reopened on June 25, 2020. The child care center was due for its water outlet testing on PBS's 3-year cycle on March 5, 2022. However, testing was not performed until August 23, 2022—789 days after the child care center reopened and 171 days after it was due to be tested under PBS's 3-year testing requirement. The lead level for a children's sink at the child care center tested at 209 ppb, almost 14 times the EPA action level. The sink remained operational until PBS received the test results—59 days after sample collection and more than 2 years after reopening the center.
- **Sam Nunn Atlanta Federal Center, Atlanta, Georgia** – According to PBS, the child care center closed on March 20, 2020, and reopened on April 4, 2022. The child care center was due for its water outlet testing on PBS's 3-year cycle on October 12, 2021. However, testing was not performed until September 21, 2022—170 days after the center reopened and 344 days after it was due to be tested under PBS's 3-year testing requirement. Four water outlets at the child care center had a lead level above the EPA action level. For one outlet, the lead level was 82.3 ppb, 5.5 times the EPA action level. PBS received the test results 20 days after sample collection and 190 days after the child care center reopened. The four water outlets were operational at the time of our January 9, 2023, site visit, although child drinking spouts were taped off for safety.
- **Internal Revenue Southwest Service Center, Austin, Texas** – According to PBS, the child care center closed on March 23, 2020, and reopened on June 14, 2021. The child care center was due for its water outlet testing on PBS's 3-year cycle on September 26, 2021. However, testing was not performed until July 12, 2022—393 days after the center reopened and 289 days after it was due to be tested under PBS's 3-year testing requirement. Four water outlets had a lead level above the EPA action level. Testing found the lead level at one outlet at 100 ppb and another at 79.9 ppb—6.7 and 5.3 times the EPA action level, respectively. These outlets remained operational until PBS received the test results—83 days after sample collection and 476 days after the child care center reopened.

²¹ One child care center closed in April 2022 while it undergoes a major renovation.

PBS Did Not Comply with Its Conditional Annual Water Outlet Testing Requirements

PBS's *Drinking Water Quality Management* policy requires annual testing of water outlets if:

- A child care center water outlet returns test results for lead above 10 ppb, but below EPA's action level of 15 ppb; and
- The child care center is located in a building that is more than 25 years old.

An OFM Facility Risk Management Division industrial hygienist told us that PBS is not tracking this information and is not conducting additional annual testing. Accordingly, PBS is not complying with these conditional annual testing requirements.

In sum, PBS did not follow its water outlet testing requirements for GSA child care centers. As a result, PBS placed children and employees in the child care centers at risk of exposure to elevated levels of lead and copper. PBS should establish a comprehensive protocol for water testing in child care centers that ensures, among other things, that all water outlets are tested as required by PBS's *Drinking Water Quality Management* policy and that the testing occurs within required time frames. PBS also should ensure water quality test results—especially those above EPA action levels—are communicated timely to building tenants, GSA child care center operators, and parents and guardians of affected children.

Additionally, PBS should amend and implement its *Drinking Water Quality Management* policy to formalize its requirement to complete additional water testing at child care centers that close for extended periods of time.

Finding 3 – PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance were flawed because they did not address the risks of water stagnation due to periods of decreased water usage.

To address the risks of water stagnation, the CDC and EPA recommend flushing water systems during periods of decreased water usage and testing for contaminants. However, we identified deficiencies in PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance that impaired its ability to effectively address the risks of water stagnation due to periods of decreased water usage. Specifically, we found that:

- PBS's *Drinking Water Quality Management* policy did not require sufficient testing to identify contaminants in GSA water systems during periods of decreased water usage; and
- The PBS water safety guidance did not establish clear requirements for flushing and chlorine checks.

These deficiencies are described on the pages that follow.

PBS's Drinking Water Quality Management Policy Did Not Require Sufficient Testing to Identify Contaminants in GSA Water Systems during Periods of Decreased Water Usage

PBS's *Drinking Water Quality Management* policy did not require sufficient testing to identify contaminants in GSA water systems during periods of decreased water usage. Instead, the policy only required testing for lead and copper in response to tenant complaints; construction activities; or emergencies, such as floods.

Because periods of reduced water usage increase the risk to water GSA systems, regular testing for disinfectant is critical to identify and address the potential for contamination. The importance of regular testing during these periods is clearly demonstrated in the discovery of lead in three GSA-owned buildings in Cleveland, Ohio, during the height of the COVID-19 pandemic.

In August 2020, PBS tested water from an outlet at the Anthony J. Celebrezze Federal Building after replacing plumbing components. When test results showed elevated lead levels, PBS conducted additional tests to identify the source, and again identified elevated lead levels “at random outlets throughout the building.” PBS later tested water in October 2020, at the neighboring Carl B. Stokes U.S. Courthouse and Howard M. Metzenbaum U.S. Courthouse and discovered elevated lead levels at both buildings. After consulting with the City of Cleveland, Water Division; and the Ohio EPA, PBS determined that “the drastic reduction in water usage we have experienced [during the COVID-19 pandemic] allows the water in pipes to stagnate,” and that reduced occupancy was the primary factor contributing to high lead levels in the three buildings.

Nationwide, GSA-owned facilities are at even greater risk of stagnation-related lead contamination because of the age of its building inventory. GSA-owned facilities are, on average, 49 years old. This means that many GSA-owned facilities were constructed prior to the Safe Drinking Water Act Amendments of 1986, which required “lead free” plumbing for installations or repairs. As a result, GSA facilities constructed prior to 1986 may have lead components in their plumbing systems.²² Water stagnation in these buildings increases the likelihood and quantity of lead contamination.

The PBS Water Safety Guidance Did Not Establish Clear Requirements for Flushing and Chlorine Checks

As described on the following pages, the PBS water safety guidance did not establish clear requirements for flushing and chlorine checks.

²² 42 U.S.C. 300f-300j-9. Congress enacted the Safe Drinking Water Act in 1974 to ensure the quality of America's drinking water. On June 19, 1986, Congress enacted amendments to the Safe Drinking Water Act that only “lead free” plumbing may be used in the installation or repair of: (1) public water systems; or (2) in a residential or non-residential facility providing water for human consumption, which is connected to a public water system. Later versions of the Safe Water Drinking Act revised the definition of “lead free” to lower percentages of lead.

The PBS water safety guidance for flushing and chlorine checks based upon occupancy rates was unclear. The PBS water safety guidance, updated October 30, 2020, based flushing and testing requirements on building occupancy levels. For PBS buildings with less than 50 percent occupancy, the guidance requires PBS to flush all water outlets and test chlorine levels for a sample of outlets. However, the PBS water safety guidance did not assign responsibility for determining occupancy rates or define how occupancy should be calculated. As a result, we found that building management had various ways to calculate occupancy and that occupancy estimates may not be reliable.

The director of OFM’s Facility Risk Management Division told us that building occupancy information was available from a number of sources, such as the Daily Occupancy Tool or Physical Access Control Systems; however, they did not specify which source should be used.²³ During our audit interviews, we learned that occupancy rates had been checked during the pandemic for only 4 of the 13 GSA-owned buildings we sampled. Further, some building occupancy estimates were based solely on vacancy rates. This practice does not account for hybrid work, potentially allowing PBS to consider tenant space fully occupied even if most employees are teleworking. As a result, PBS may not perform necessary flushing and testing even though water usage is significantly reduced.

The PBS water safety guidance did not specify the equipment that should be used to check chlorine levels. The PBS water safety guidance, updated October 30, 2020, required the use of low-cost test strips but did not establish a target chlorine level. Subsequently, PBS updated the guidance again on December 22, 2020, that addressed chlorine checks with greater detail. While the guidance established target chlorine levels of 0.2 ppm, it set inconsistent requirements for chlorine-checking equipment. In one place, the guidance called for use of a portable colorimeter or similar device.²⁴ In another place, it called for the use of low-cost, hand-held field colorimeters and allowed for the use of test strips if the specified colorimeters were unavailable.

Because of the inconsistent requirements, the chlorine-checking equipment used by O&M contractors was not always sufficiently accurate to measure the 0.2 ppm target chlorine level. For example:

- **Ariel Rios Federal Building, Washington, D.C.** – The O&M contractor told us they measured chlorine using test strips that indicate whether chlorine levels are between 0 and 25 ppm. Using these test strips, the O&M contractor would be unable to determine how much chlorine was present and whether it met the 0.2 ppm target.

²³ The Daily Occupancy Tool is a collection of data that measures how densely a space is being used, by counting the total number of employees in the building or space on any given day. The Physical Access Control Systems are electronic measures to control employee and visitor access in facilities, such as Personal Identify Verification card readers.

²⁴ A colorimeter is a device used to measure the concentration of chlorine in water.

- **Mary E. Switzer Federal Building, Washington, D.C.** – The O&M contractor told us they measured chlorine using test strips. However, for chlorine levels below 0.5 ppm, testing logs only provide a range of 0 to 0.5 ppm. Using these results, the O&M contractor would be unable to determine whether the chlorine levels met the 0.2 ppm target.

In comparison, PBS Region 5 purchased colorimeters and provided the same model to O&M contractors at every PBS Region 5 GSA-owned building we sampled. Each PBS Region 5 O&M contractor was given training by the colorimeter vendor. Because of this, O&M contractors in PBS Region 5 were better prepared to accurately measure chlorine levels and to use the test results to develop flushing practices.

Taken together, the deficiencies described above demonstrate flaws in PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance that impaired PBS's ability to effectively address the risks of stagnant water. This may be particularly problematic if GSA's tenants maintain or increase telework or remote work opportunities, which would have a long-term impact on building occupancy levels and water usage.

PBS should address these deficiencies by amending and implementing PBS's *Drinking Water Quality Management* policy to include reduced occupancy or decreased water usage as additional criteria for lead, copper, *Legionella* bacteria, and other contaminant testing. PBS should ensure requirements in PBS's *Drinking Water Quality Management* policy, its companion *Desk Guide for Drinking Water Quality Management*, and the PBS water safety guidance are incorporated into the amended policy, unless there are safety reasons why such requirements cannot or should not be incorporated. PBS also should formalize its requirement to complete additional testing at child care centers that close for extended periods of time.

Conclusion

Since the onset of the COVID-19 pandemic, many GSA buildings have experienced extended periods of reduced or no occupancy. During these periods, decreased water usage can cause water in the building systems to become stagnant. This may allow hazardous contaminants like lead, copper, or *Legionella* bacteria to accumulate.

To address the risk of water stagnation arising from the COVID-19 pandemic, PBS developed water safety guidance that was designed to include recommendations from the CDC and EPA. PBS relied extensively upon its O&M contractors to implement the water safety activities set forth in the PBS water safety guidance. However, we found that PBS did not consistently incorporate these water safety activities into O&M contracts or provide the necessary oversight to ensure that the O&M contractors performed the activities.

We also found that PBS did not follow its requirements for periodic testing for lead and copper in water outlets in GSA child care centers. GSA closed the majority of its child care centers during the COVID-19 pandemic. However, PBS did not test the water in many of these centers for months or years after reopening them. Once performed, tests identified hazardous levels of lead and copper in outlets at some GSA child care centers.

Finally, we found that PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance were flawed. Specifically, PBS's *Drinking Water Quality Management* policy did not fully incorporate CDC and EPA recommendations on maintaining water quality or testing for contaminants during periods of reduced or no occupancy. Additionally, the PBS water safety guidance did not include clear requirements for flushing and checking disinfectant levels, which can be a key indicator of water stagnation in building systems.

Taken together, these deficiencies demonstrate that PBS must improve its water safety guidance and strengthen oversight to ensure that water safety activities are consistently implemented. PBS has initiated some measures designed to address the deficiencies identified in our report. For example, PBS has issued updated policy and guidance, including the August 4, 2023, *Facilities Management Alert (FM-FY23-02) Avoiding Water Stagnation*, and a November 16, 2023, update to its *Drinking Water Quality Management* policy. Further, according to the director of OFM's Facility Risk Management Division, PBS has tested the water outlets in the child care centers that were not tested except those that PBS did "not believe would ever be used to fill a drinking vessel under any circumstance." Because PBS took these actions after completion of our audit fieldwork, we did not evaluate their implementation or effectiveness.

Recommendations

We recommend that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by:

1. Defining roles and responsibilities for maintaining water quality in GSA-controlled facilities.
2. Ensuring that:
 - a. Water quality is maintained through consistent policies and practices nationwide;
 - b. Deviations to PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance are approved by PBS's Central Office; and
 - c. Any water safety policies or guidance developed by regional offices do not contradict policies and guidance issued at the national level.
3. Ensuring that PBS's water safety activities are incorporated into O&M contracts, recorded in PBS's NCMMS, and overseen by PBS personnel.
4. Incorporating PBS's water safety oversight responsibilities into quality assurance surveillance plans for O&M contracts to ensure contractor compliance with water safety activities.
5. Ensuring that PBS personnel and O&M contractors have access to tenant spaces so flushing can be performed.
6. Amending O&M and other contracts to ensure that energy efficiency and water conservation requirements do not conflict with PBS's *Drinking Water Quality Management* policy and the PBS water safety guidance.
7. Ensuring that water is tested in GSA's child care centers as required by PBS's *Drinking Water Quality Management* policy.
8. Ensuring water quality test results—especially those above EPA action levels—are communicated timely to building tenants, GSA child care center operators, and parents and guardians of affected children.
9. Amending and implementing PBS's *Drinking Water Quality Management* policy to:
 - a. Include reduced occupancy or decreased water usage as additional criteria for lead, copper, *Legionella* bacteria, and other contaminant testing;
 - b. Ensure requirements in PBS's *Drinking Water Quality Management* policy, its companion *Desk Guide for Drinking Water Quality Management*, and the PBS water safety guidance are incorporated into the amended policy, unless there

- are safety reasons why such requirements cannot or should not be incorporated;
and
- c. Formalize its requirement to complete additional testing at child care centers that close for extended periods of time.

GSA Comments

The PBS Commissioner agreed with the report recommendations and asserted that the majority of the report recommendations have been addressed through the issuance and implementation of GSA Order PBS 1000.7A, *Drinking Water Quality Management*, and its companion *Desk Guide for Drinking Water Quality Management*, issued November 16, 2023. Because PBS took these actions after completion of our audit fieldwork, we have not evaluated their implementation or effectiveness.

PBS's response can be found in its entirety in **Appendix B**.

Audit Team

This audit was managed out of the Southeast Sunbelt Region Audit Office and conducted by the individuals listed below:

Nicholas Painter	Regional Inspector General for Auditing
Valerie Smith	Audit Manager
Jeremy Boozikee	Auditor-In-Charge
Terri-Gayl Hoshell	Auditor

Appendix A – Objective, Scope, and Methodology

Objective

In April 2020, we began monitoring the actions GSA took in response to the nationwide public health emergency resulting from COVID-19 and GSA’s implementation of the Coronavirus Aid, Relief, and Economic Security Act. During our monitoring efforts, we learned that decreased water usage resulting from building closures or occupancy reductions in GSA-controlled facilities can create hazards for returning occupants, such as an increased risk of exposure to lead, copper, *Legionella* bacteria, and other contaminants. As a result, we included this audit in our *Fiscal Year 2022 Audit Plan*. Our audit objective was to determine whether GSA has implemented CDC and EPA guidance, as well as GSA policies and guidance, to ensure safe drinking water in GSA-controlled facilities after reduced occupancy due to the COVID-19 pandemic.

Scope and Methodology

We evaluated policies, procedures, guidance, communication, and internal controls related to water quality management in GSA-controlled facilities. We sampled buildings in PBS Region 4, PBS Region 5, and PBS NCR; and visited 18 sites—13 GSA-owned, 3 GSA-leased, and 2 GSA-delegated.²⁵ We performed three additional site visits to GSA child care centers in PBS Region 4, PBS’s Greater Southwest Region (PBS Region 7), and PBS’s Northwest/Arctic Region (PBS Region 10) that recorded contaminants exceeding EPA action levels for lead or copper in some water outlets.

To accomplish our objective, we:

- Analyzed guidance from the CDC; EPA; American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.; and International Association of Plumbing and Mechanical Officials on maintaining water quality in building systems;
- Reviewed PBS’s *Drinking Water Quality Management* policy (GSA Order PBS 1000.7 and GSA Order PBS 1000.7A) and companion desk guides;
- Reviewed PBS’s water safety guidance:
 - *GSA Building Managers and LAMs Readiness Guidance: Operations and Maintenance Reopening Guidance for Buildings that have been Idle (<100% fully operational) during the Pandemic* (May 27, 2020);
 - *GSA Building Managers and LAMs Readiness Guidance: Operations and Maintenance Reopening Guidance for Buildings that have been Idle (<100% fully operational) during the Pandemic* (June 10, 2020);
 - *GSA Building Managers and LAMs Readiness Guidance: Operations and Maintenance Reopening Guidance for Buildings that have been Idle (<100% fully*

²⁵ GSA-delegated space (or GSA-delegated building) means GSA-controlled space for which GSA has delegated operational, maintenance, or protection authority to the customer agency.

operational) during the Pandemic, Detailed instructions on building plumbing flushing (Cleveland Water), Maintaining or Restoring Water Quality in Buildings With Low or No Use (EPA), Guidance for Reopening Buildings After Prolonged Shutdown or Reduced Operations (CDC), and DRAFT Federal Building Re-occupancy Preparation-Water System Guidance (October 30, 2020);

- *Potable Water Systems Performance Work Statement for Reduced Occupancy, Revised Low Water Use Guidance, Water Flushing Contract Guidance (COVID-19), and Water Testing and Flushing Recordkeeping Template (December 22, 2020); and*
- *Emails from PBS’s former OFM Assistant Commissioner, Reminder – Water Flushing Guidance (November 4, 2021, and November 22, 2021).*
- Reviewed PBS’s *Facilities Management Alert (FM-FY23-02) Avoiding Water Stagnation (August 4, 2023);*
- Interviewed an EPA official;
- Interviewed PBS officials, O&M contractor staff, and representatives from GSA-leased and GSA-delegated buildings; and
- Obtained and analyzed records of water activities (flushing, testing, temperature checks, etc.) from NCMMS, other electronic systems, or in hard copy.

Sampling

We selected our building sample from GSA’s Inventory of Owned and Leased Properties. We sampled a total of 18 buildings in PBS Region 4, PBS Region 5, and PBS NCR for our survey and fieldwork. For each region, we selected a random sample of GSA buildings, based on size, vacancy rate, and age. Separate from our sample above, we judgmentally selected three GSA child care centers from PBS Region 4, PBS Region 7, and PBS Region 10. These three child care centers were chosen because they had the highest levels of lead based on PBS’s recent water test results in child care centers.

Internal Controls

We assessed internal controls significant within the context of our audit objective against GAO-14-704G, *Standards for Internal Control in the Federal Government*. The methodology above describes the scope of our assessment, and the report findings include any internal control deficiencies we identified. Our assessment is not intended to provide assurance on GSA’s internal control structure as a whole. GSA management is responsible for establishing and maintaining internal controls.

Compliance Statement

We conducted the audit between May 2022 and May 2023 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our

findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

Appendix B – GSA Comments

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Public Buildings Service

May 22, 2024

MEMORANDUM FOR: NICHOLAS PAINTER
REGIONAL INSPECTOR GENERAL FOR AUDITING (JA-4)
SOUTHEAST SUNBELT REGION AUDIT OFFICE

FROM: ELLIOT DOOMES 
COMMISSIONER (P)
PUBLIC BUILDINGS SERVICE

SUBJECT: Response to the GSA Office of Inspector General Draft
Report, *Audit of GSA's Response to COVID-19: PBS Faces
Challenges to Ensure Water Quality in GSA-Controlled
Facilities*, Report Number A201018-7

Thank you for the opportunity to comment on the Office of Inspector General (OIG) draft report, *Audit of GSA's Response to COVID-19: PBS Faces Challenges to Ensure Water Quality in GSA-Controlled Facilities*. The health and safety of our employees and occupants is of utmost importance to the Public Buildings Service (PBS).

Prior to the May 2022 entrance conference for this audit, GSA had already begun its own evaluation of its drinking water policy. In the early stages, GSA acknowledged the increased potential for degradation in facility drinking water quality due to post-pandemic circumstances and initiated collaboration with federal, state, and local agencies, as well as industry experts, to revise our existing policies. The OIG has noted that their audit recommendations are based on GSA's former policy and guidance from 2016, which is no longer in effect, and GSA has since addressed the majority of the OIG's findings and recommendations through issuance and implementation of the Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023.

To ensure the health and safety of children and staff in GSA's child care centers, GSA promptly initiated drinking water quality testing at all centers, implemented actions to mitigate any identified risks, and communicated with child care center providers to keep parents informed of drinking water quality in these centers. Across the building portfolio, GSA's actions have resulted in the establishment of an industry-leading water quality management initiative to include baseline water quality testing taking place in most GSA-controlled facilities throughout 2024. Additionally, the initiative includes extensive training and outreach to GSA employees, tenant agencies, lessors, and stakeholders, along with enhanced oversight of water flushing and testing plans implementation. This program goes beyond regulatory mandates to ensure workplace health and safety and

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addresses the drinking water quality concerns identified in the audit. Importantly, these measures were already in place prior to the issuance of the draft audit report.

Please find responses to the specific recommendations included in the draft report below.

OIG Recommendations

- 1. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by defining roles and responsibilities for maintaining water quality in GSA-controlled facilities.**

PBS agrees with the recommendation, as demonstrated in Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023.

- 2a. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by ensuring that water quality is maintained through consistent policies and practices nationwide.**

PBS agrees with the recommendation, as demonstrated in Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023. Currently, PBS is in the process of modifying existing O&M contracts in order to incorporate PBS 1000.7A and associated requirements. Additionally, on November 16, 2023, PBS issued Water Quality Contract Modification guidance which provides a consistent approach for modifying, tracking, inspecting, and accepting Water Quality Management contracts and services. Guidance has been subsequently updated and is to be updated as needed.

- 2b. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by ensuring that deviations to PBS's Drinking Water Quality Management policy and the PBS water safety guidance are approved by PBS's Central Office.**

PBS agrees with the recommendation, as demonstrated in Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023. Currently, PBS is in the process of modifying existing O&M contracts in order to incorporate PBS 1000.7A and associated requirements. Additionally, on November 16, 2023, PBS issued Water Quality Contract Modification guidance which provides a consistent approach for modifying, tracking, inspecting, and accepting Water Quality Management contracts and

services. Guidance has been subsequently updated and is to be updated as needed.

- 2c. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by ensuring that any water safety policies or guidance developed by regional offices do not contradict policies and guidance issued at the national level.**

PBS agrees with the recommendation, as demonstrated in Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023. Currently, PBS is in the process of modifying existing O&M contracts in order to incorporate PBS 1000.7A and associated requirements. Additionally, on November 16, 2023, PBS issued Water Quality Contract Modification guidance which provides a consistent approach for modifying, tracking, inspecting, and accepting Water Quality Management contracts and services. Guidance has been subsequently updated and is to be updated as needed.

- 3. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by ensuring that PBS's water safety activities are incorporated into O&M contracts, recorded in PBS's NCMMS, and overseen by PBS personnel.**

PBS agrees with the recommendation. Currently, PBS is in the process of modifying existing O&M contracts in order to incorporate PBS 1000.7A and associated requirements. Additionally, on November 16, 2023, PBS issued Water Quality Contract Modification guidance which provides a consistent approach for modifying, tracking, inspecting, and accepting Water Quality Management contracts and services. Guidance has been subsequently updated and is to be updated as needed.

- 4. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by incorporating PBS's water safety oversight responsibilities into quality assurance surveillance plans for O&M contracts to ensure contractor compliance with water safety activities.**

PBS agrees with the recommendation and will address this in the Corrective Action Plan (CAP).

- 5. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by ensuring that PBS personnel and O&M contractors have access to tenant spaces so flushing can be performed.**

PBS agrees with the recommendation. When the facility flushing plan requires access to outlets located within restricted tenant space, PBS will make every effort to gain access to spaces for flushing.

6. **OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by amending O&M and other contracts to ensure that energy efficiency and water conservation requirements do not conflict with PBS's Drinking Water Quality Management policy and the PBS water safety guidance.**

PBS agrees with the recommendation. PBS has reviewed our contract requirements and has verified our current national O&M contract specifications and other contracts do not present a conflict between water flushing requirements and energy and water conservation goals. PBS has verified there are no incentives or risks to the contractor in contracts for meeting energy and water goals at the expense of water quality.

7. **OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by ensuring that water is tested in GSA's child care centers as required by PBS's Drinking Water Quality Management policy.**

PBS agrees with the recommendation, as demonstrated by drinking water testing conducted at all of GSA's child care centers and by the Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023. For child care centers, the policy specifically requires:

- Weekly flushing of drinking water outlets and monthly cleaning of drinking water outlet aerators.
- Annual drinking water testing for lead and copper, in open child care centers. If child care centers are closed for 30 days or more, drinking water must be tested for lead, copper, and *Legionella* before reopening.
- Before use of newly installed drinking water outlets, flushing and testing for lead, copper, and total coliform bacteria, including *E. coli*.
- Remediation and retesting of any outlets with results that exceed the applicable federal, state, or local thresholds to reduce concentration levels before resuming their use.
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8. **OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by ensuring water quality test results—especially those above EPA's action levels—are communicated timely to building tenants, GSA child care center operators, and parents and guardians of affected children.**

PBS agrees with the recommendation, as demonstrated in Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023.

- 9a. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by amending and implementing PBS's Drinking Water Quality Management policy to include reduced occupancy or decreased water usage as additional criteria for lead, copper, Legionella bacteria, and other contaminant testing.**

PBS agrees with the intent of this recommendation and with CDC guidance that it is important to check for hazards before reopening after a prolonged period of building inactivity. Our current policy aligns with industry water quality management standards and in fact exceeds industry standards for water quality management, as demonstrated in Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023.

- 9b. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by amending and implementing PBS's Drinking Water Quality Management policy to ensure requirements in PBS's Drinking Water Quality Management policy and companion Desk Guide and the PBS water safety guidance are incorporated into the amended policy, unless there are safety reasons why such requirements cannot or should not be incorporated.**

PBS implemented this recommendation via the updated Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023.

- 9c. OIG recommends that the PBS Commissioner provide appropriate oversight to ensure water is safe to occupants in its buildings by amending and implementing PBS's Drinking Water Quality Management policy to formalize its requirement to complete additional testing at child care centers that close for extended periods of time.**

PBS implemented this recommendation via the updated Drinking Water Quality Management Policy (PBS 1000.7A) and associated guidance, of November 16, 2023.

Thank you again for the opportunity to review and comment on the draft report. If you have any questions, please contact Martin Gusky, Facility Risk Management Director, Office of Facilities Management, at 202-527-2149.

Appendix C – Report Distribution

GSA Administrator (A)

GSA Deputy Administrator (AD)

PBS Commissioner (P)

Acting PBS Deputy Commissioner (P1)

Deputy Commissioner of Enterprise Strategy (P2)

Acting Chief of Staff (PB)

Acting Deputy Chief of Staff (PB)

Chief Financial Officer (B)

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Deputy Assistant Inspector General for Acquisition Audits (JA)

Deputy Assistant Inspector General for Real Property Audits (JA)

Director, Audit Planning, Policy, and Operations Staff (JAO)