

GENERAL SERVICES ADMINISTRATION  
Washington, DC 20405

PBS 1000.7A  
November 16, 2023

GSA ORDER

SUBJECT: Drinking Water Quality Management

- 1) Purpose. This Order establishes national U.S. General Services Administration (GSA) Public Building Service (PBS) requirements for effectively managing and overseeing drinking water (DW) to help ensure the well-being of building occupants, contractors, and visitors in federally owned facilities and leased space under the jurisdiction, custody, or control of GSA (including federally owned facilities operating under a GSA delegation of operations and maintenance (O&M)).
- 2) Cancellations.
  - a) *Drinking Water Quality Management*, PBS 1000.7 (September 13, 2016; Extended September 8, 2023).
  - b) Facilities Management Alert (FM-FY23-02) – *Avoiding Water Stagnation*, (August 4, 2023).
- 3) Authority.
  - a) Code of Federal Regulations: 41 C.F.R. § 102-80
  - b) United States (U.S.) Occupational Safety and Health Administration (OSHA): 29 C.F.R. § 1960, 29 C.F.R. § 1910.141, & General Duty Clause (Section 5(a)(1) of the Occupational Safety and Health Act) (29 U.S.C. § 654)
  - c) U.S. Environmental Protection Agency (EPA): Safe Drinking Water Act (42 U.S.C. § 300f, *et seq.*)
  - d) EPA: National Primary Drinking Water Regulations (40 C.F.R. § 141) including Lead and Copper Rule (40 C.F.R. § 141 Subpart I)
  - e) EPA: National Primary Drinking Water Regulations Implementation (40 C.F.R. § 142)
  - f) EPA: Other Safe Drinking Water Act Regulations (40 C.F.R. § 143) including Use of Lead-Free Pipes, Fittings, Fixtures, Solder, and Flux for Drinking Water (40 C.F.R. § 143 Subpart B)
  - g) Applicable state and local DW authorities
  - h) Applicable federal, state, and local plumbing codes

- 4) Organizations, Consensus Standards, and Guidelines Used in the Development of the Order.<sup>1</sup>
- a) EPA: “3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities”
  - b) U.S. Centers for Disease Control and Prevention (CDC): “Toolkit for Controlling Legionella in Common Sources of Exposure”
  - c) ASHRAE: Standard 514-2023 Risk Management for Building Water Systems: Physical, Chemical, and Microbial Hazards
  - d) ASHRAE: Standard 188-2021 Legionellosis: Risk Management for Building Water Systems
  - e) ASHRAE: Guideline 12-2023 Managing the Risk of Legionellosis Associated with Building Water Systems
  - f) American Industrial Hygiene Association: Recognition, Evaluation, and Control of Legionella in Building Water Systems 2nd Edition
  - g) American Water Works Association: Responding to Water Stagnation in Buildings with Reduced or No Water Use
  - h) International Association of Plumbing & Mechanical Officials: Tips and Recommendations for the Safe and Efficient Flushing of Plumbing Systems in Buildings
- 5) Background. PBS is committed to providing safe and healthy spaces for building occupants, contractors and visitors in federally owned facilities and leased space under the jurisdiction, custody, or control of GSA (including federally owned facilities operating under a GSA delegation of O&M). Public water systems (PWS), usually municipality-owned and operated, are responsible for continuously providing safe DW to the public that meets the EPA’s National Primary Drinking Water Regulations (NPDWR) of the Safe Drinking Water Act (SDWA). However, a PWS may be publicly or privately owned. A PWS provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year. EPA has defined three types of PWS:
- a) Community Water System (CWS): A PWS that supplies water to the same population year-round.
  - b) Non-Transient Non-Community Water System (NTNCWS): A PWS that regularly supplies water to at least 25 of the same people at least six months per year. Some examples are schools, factories, office buildings, and hospitals which have their own water systems.
  - c) Transient Non-Community Water System (TNCWS): A PWS that provides water in a place such as a gas station or campground where people do not remain for long periods of time.

Private water systems, such as private DW wells, serve individual households or small groups of people and are not regulated under the EPA SDWA. These

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<sup>1</sup> Links to these reference materials may be found in the accompanying desk guide.

systems usually serve fewer people and are often found in rural or remote areas. However, in cases where the state has the primary authority to enforce regulations for PWS, the state's definition of a PWS may differ from the EPA's definition and could include certain types of private water systems. It is also important to highlight that while the EPA sets federal DW standards and regulations, individual states or local authorities can also establish their own DW requirements, which may be more stringent than the federal standards. Water systems are obligated to comply with regulations at the federal, state, and local levels.

The quality of a facility's DW can be influenced by various factors, including the design and condition of the building's plumbing system, maintenance and operational practices, construction and occupant activities, and issues related to the PWS.

Facilities often have limited control over water quality issues originating from the PWS and in those situations can only implement control measures in response to notifications from the appropriate authority. The primary responsibility for maintaining and delivering safe water lies with the PWS, which manages the water source, treatment, and distribution systems. Facilities rely on the PWS to provide clean and safe water for their operations.

Once a facility receives acceptable water from the PWS, it becomes the responsibility of the facility's controlling authority (whether it is PBS, a lessor, or an agency with delegated authority) to provide potable water at point-of-use outlets that meet EPA's NPDWR per the OSHA Sanitation Standard (29 C.F.R. § 1910.141). The continued implementation of a national GSA Drinking Water Quality Management Order will help ensure that this occurs.

- 6) Scope and applicability. This Order, and the companion desk guide, apply to Federally owned facilities under the jurisdiction, custody, and control of the GSA, including facilities operating under a GSA delegation of authority. Limited aspects of this Order also apply to space leased by GSA and are dictated by the provisions of the lease.
- 7) Responsibilities.
  - a) PBS Office of Facilities Management (OFM) Facility Risk Management Division (FRMD). Central Office PBS OFM FRMD is responsible for:
    - i) Issuance of this Order and subsequent updates,
    - ii) Providing national guidance and training in support of this Order,
    - iii) Supporting regional environmental, health, safety, and fire protection (EHSF) program offices in DW program management activities.

- b) PBS OFM Facilities Operations. Central Office PBS OFM Facilities Operations is responsible for:
- i) Designing, implementing, and providing national program oversight for the PBS Guidance to Maintain or Restore Water Quality<sup>2</sup>, ensuring that it is effectively applied across Federally owned facilities to maintain water safety and prevent stagnation-related issues,
  - ii) Ensuring the O&M master specification incorporates the most current, applicable DW requirements.
- c) PBS OFM Child Care Center (CCC) Center of Expertise. Central Office PBS OFM CCC Center of Expertise is responsible for:
- i) Facilitating an understanding of state and local CCC DW requirements, coordinating with Regional EHSF program offices for CCC DW testing, and communicating with CCC providers regarding DW matters.
- d) PBS Office of Architecture and Engineering (OAE). Central Office PBS OAE is responsible for:
- i) Ensuring that updates to the P100 Facility Standards for the Public Buildings Service incorporate the most current, applicable DW requirements.
- e) PBS Office of Leasing. Central Office PBS Office of Leasing is responsible for:
- i) Ensuring that updates to the standard, national lease contracting language incorporate the most current, applicable DW requirements in leases.
- f) PBS Regional EHSF Program Office. The PBS Regional EHSF program office is responsible for:
- i) Overseeing compliance with the DW management program and this Order throughout the region,
  - ii) Providing technical DW program support and training to regional Facility Managers, Facility Operations Teams, Project Managers, Lease Administration Managers, and additional internal customers as needed,
  - iii) Reviewing DW reports and documentation for accuracy and completeness and providing recommendations to responsible offices as needed,
  - iv) Providing review and input on mitigation and corrective action efforts in buildings where sources of poor DW are identified,

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<sup>2</sup> Links to this guidance and other reference materials may be found in the accompanying desk guide.

- v) Overseeing the conducting of CCC DW testing and documenting results in IRIS OSH.
- g) PBS Regional Design and Construction or Project Delivery Divisions. Regional Design and Construction or Project Delivery Divisions<sup>3</sup> are responsible for:
  - i) Ensuring post-installation DW testing is included in applicable projects, and the deliverables are received after construction and prior to use.
- h) PBS Regional Building Operations Program Office. The PBS Regional Building Operations program office is responsible for:
  - i) Implementing and providing Regional program oversight for PBS Guidance to Maintain or Restore Water Quality, ensuring that it is effectively applied across Federally owned facilities in the region to maintain water safety and prevent stagnation-related issues.
- i) PBS Regional Facility Management and Service Center (FM/SC) Divisions. The Regional FM/SC Divisions are responsible for:
  - i) Ensuring post-installation DW testing is included in applicable projects, and the deliverables are received after construction and prior to use,
  - ii) Ensuring DW incidents, complaints, and emergencies are promptly investigated and reported to the regional EHSF Program Office,
  - iii) Documenting initial DW incidents, complaints, and emergencies submitted through the O&M Contractor and Facility Manager in the PBS NCMMS,
  - iv) Communicating to affected occupants any relevant information about DW-related incidents or emergencies per PBS 2400.1 Risk Management Notification (January 8, 2021),
  - v) Posting notifications at CCC related to DW testing,
  - vi) Ensuring the completion of mitigation and corrective action efforts in buildings where sources of poor DW are identified,
  - vii) Ensuring building systems, including backflow prevention devices, are maintained in accordance with the existing O&M specification, site-specific building operating plans, and preventive maintenance programs,
  - viii) Ensuring any federally owned or operated water systems (CWS, NTNCWS, TNCWS, or private water systems), under GSA's jurisdiction, custody, or control, are maintained per applicable federal, state, or local regulations.

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<sup>3</sup> Regional organizational structures may dictate which office has certain responsibilities.

- j) PBS Regional Leasing Specialists / Lease Contracting Officers / Lease Administration Managers (LS/LCO/LAM). Regional LS/LCO/LAMs are responsible for:
    - i) Ensuring the most updated DW clauses are added for new, replacing, succeeding, and superseding leases,
    - ii) Collaborating with the Lessor and, if necessary, escalating any issues to ensure that the lease provisions are applied in addressing DW concerns raised by GSA or other federal occupants in GSA-controlled leased space.
  - k) Delegated Agencies. Delegated Agencies must comply with this Order and the accompanying desk guide.
- 8) Policy.
- a) Maintaining DW. The following items must be used to proactively reduce DW problems.
    - i) CWS, NTNCWS, or TNCWS. In federally owned and leased facilities under the jurisdiction, custody, or control of GSA (including facilities operating under a GSA delegation of authority) where the facility is also the operator of a CWS, NTNCWS, or TNCWS, it is the responsibility of the party or parties responsible for the water system to ensure compliance with applicable federal, state or local DW regulations. In cases where there is no separate party responsible for the water system, the obligation falls upon the controlling authority of the facility. Depending on the facility, this would be the responsibility of PBS, a lessor, or an agency with delegated authority to operate and maintain the facility.
    - ii) Private water systems. In federally owned and leased facilities under the jurisdiction, custody, or control of GSA (including facilities operating under a GSA delegation of authority) where DW is sourced from private water systems such as a private DW well, it is the responsibility of the party or parties responsible for the water system to ensure compliance with applicable state or local DW requirements. In cases where there is no separate party responsible for the water system, the obligation falls upon the controlling authority of the facility. Depending on the facility, this would be the responsibility of PBS, a lessor, or an agency with delegated authority to operate and maintain the facility.

For awareness, federally owned and leased facilities under the jurisdiction, custody, or control of GSA may own or operate CWS, NTNCWS, TNCWS, and private water systems in limited instances.

In addition to meeting the state or local DW requirements, proper documentation is essential. This includes, but is not limited to: sanitary surveys, operator certification, and drilling logs. It is the responsibility of

the water system provider or controlling authority to maintain these documents.

- iii) Consumer Confidence Reports (CCR). The EPA requires CWS to make a CCR, also known as an annual DW quality report, publicly available or to send it to their customers. These reports provide information about the local DW quality. The water system must publish these reports each year by July 1.

The O&M Contractor for all federally owned facilities under the jurisdiction, custody, and control of GSA (including facilities operating under a GSA delegation served by a CWS) must review these reports annually and, if any issues are noted, provide notification to the COR and document it in NCMMS. GSA or the agency with delegated authority to operate and maintain the facility must provide notification of the issues noted to each affected occupant agency point of contact.

- iv) Guidance to Maintain or Restore Water Quality. Active federally owned facilities under the jurisdiction, custody, and control of GSA (including facilities operating under a GSA delegation of authority) must implement the PBS Guidance to Maintain or Restore Water Quality, as may be amended from time to time. Unless a building-specific ASHRAE 514 water management program or ASHRAE 188 water management plan has been implemented for the potable water system, this guidance applies in a facility that meets the following criteria, irrespective of occupancy: :

- (1) Buildings over 50,000 square feet with one or more water booster pumps (both conditions must apply); or

- (2) Buildings over six stories in height.

- v) Routine Flushing of Focus Areas. Active Federally owned facilities under the jurisdiction, custody, and control of GSA (including facilities operating under a GSA delegation of authority) must conduct weekly flushing of specific areas of focus, and the aerators must be cleaned or replaced monthly if damaged. It's important to note that if aerators are replaced with laminar flow devices, monthly aerator maintenance will no longer be necessary. These areas are identified based on the populations they serve and the nature of their operations. These include:

- (1) Health Units;

- (2) Child Care Centers (as also noted below); and

- (3) Building Common and Private Tenant Showers.

Additionally, if applicable and feasible, dead-end legs of domestic water systems identified during routine maintenance must be flushed monthly.

- vi) Baseline Water Testing. In Fiscal Year 2024, an initial baseline DW quality testing by a qualified professional will be required for all active and occupied federally owned facilities that are greater than 1,000 square feet, have DW systems, and fall under the jurisdiction, custody, and control of GSA (including those operating with delegated authority from GSA). Specifically, at least 10% of cold water outlets primarily designed for human consumption, such as drinking fountains, bottle fillers, and kitchenette faucets, must be tested for lead, copper, and total coliform bacteria [including *Escherichia coli* (*E. coli*)]. At a minimum, 5 outlets must be sampled. Test results that exceed the applicable federal, state, or local thresholds must result in remedial actions to reduce concentration levels. It is essential to conduct post-remediation water testing on failed outlets by a qualified professional before resuming their use.

Additionally, a representative number of hot and cold water outlets must be tested for the presence of legionella as described in the accompanying desk guide. If systems are well controlled, as defined by CDC guidance, no further action is required. However, if systems are poorly controlled or uncontrolled, further response action is needed.

The regional EHSF program office responsible for DW will use their professional judgment to decide whether additional testing is required depending on the results of the baseline testing.

Similarly, an initial baseline DW quality testing by a qualified professional will be required for certain leased facilities under the jurisdiction, custody, or control of the GSA based on direction from the PBS Office of Leasing.

- vii) Child Care Centers (CCC).

(1) Hot and cold water point-of-use outlets with the realistic potential to be used as a drinking water source must be flushed weekly, and the aerators must be cleaned or replaced monthly if damaged. This must be on the morning of the first regular business day of each week. It's important to note that if aerators are replaced with laminar flow devices, monthly aerator maintenance will no longer be necessary.

(2) In open CCCs: DW outlets must be sampled and evaluated for lead and copper by a qualified professional annually at a minimum. This testing must include all water outlets with the realistic potential to be used as DW sources, such as those used for human consumption and washing. Test results that exceed the applicable federal, state, or local thresholds must result in remediation actions to reduce concentration levels. It is essential to conduct post-remediation water testing on failed outlets by a qualified professional before resuming their use.



The regional EHSF program office responsible for DW will use their professional judgment to decide whether additional testing outside of the CCC is necessary based on the annual test results.

- (3) In closed CCCs: Any CCC closed for 30 consecutive calendar days or more must be sampled and evaluated for lead and copper by a qualified professional approximately two to three weeks before reopening and with sufficient time for PBS to review the results and act on any issues before opening day. This testing must include all water sources with the realistic potential to be used as DW sources, such as those used for human consumption and washing. Test results that exceed the applicable federal, state, or local thresholds must result in remedial actions to reduce concentration levels. It is essential to conduct post-remediation water testing on failed outlets by a qualified professional before resuming their use.

Additionally, all water outlets primarily designed for human consumption (such as drinking fountains, bottle fillers, and faucets in kitchenettes) must be tested by a qualified professional for the presence of legionella. If systems are well controlled, as defined by CDC guidance, no further action is required. However, if systems are poorly controlled or uncontrolled, further response action is needed.

- (4) All newly installed outlets with the realistic potential to be used as a DW source must be thoroughly flushed for a minimum of 10 minutes.
- (a) Use a detectable level of disinfectant residual to indicate that flushing has been successful for cold water.
  - (b) Use the maximum hot water temperature allowed by regulations and codes, or between 120°F (49°C) to 124°F (51°C) to indicate that flushing has been successful for hot water. For outlets with automatic mixing valves, flush until the water temperature stabilizes as the water will be premixed with cold water.
- (5) All newly installed water outlets with the realistic potential to be used as a DW source, such as those used for human consumption and washing, must be tested for lead, copper, and total coliform bacteria (including E. coli) by a qualified professional before use. Test results that exceed the applicable federal, state, or local thresholds must result in remedial actions to reduce concentration levels. It is essential to conduct

post-remediation water testing on failed outlets by a qualified professional before resuming their use.

- viii) Water Testing After New Installations. All Federally owned facilities under the jurisdiction, custody, and control of GSA (including facilities operating under a GSA delegation) must conduct post-installation water testing when certain components of the water system are impacted during repair or renovation projects.
- (1) All newly installed water outlets with the realistic potential to be used as DW sources, such as those used for human consumption and washing must be thoroughly flushed for a minimum of 10 minutes.
    - (a) Use a “detectable level of disinfectant residual” to indicate that flushing has been successful for cold water.
    - (b) Use the maximum hot water temperature allowed by regulations and codes, or between 120°F (49°C) to 124°F (51°C) to indicate that flushing has been successful for hot water. For outlets with automatic mixing valves, flush until the water temperature stabilizes as the water will be premixed with cold water.
  - (2) All newly installed water outlets primarily designed for human consumption (such as drinking fountains, bottle fillers, and faucets in kitchenettes) must be tested for lead, copper, and total coliform bacteria (including E. coli) by a qualified professional before use.
    - (a) Outlets primarily designed for washing (such as bathroom sinks) do not apply, except as outlined above in the CCC section.
    - (b) Only sample cold water outlets for metals, do not sample hot water outlets or outlets with automatic mixing valves.
    - (c) Test results that exceed the applicable federal, state, or local thresholds must result in remedial actions to reduce concentration levels.
    - (d) If applicable, post-remediation water testing on failed water outlets by a qualified professional is required before use.
  - (3) When replacing building service lines and primary pipes (such as riser and headers), comply with applicable plumbing code disinfection requirements. Adequately flush point-of-use water outlets served by the new portion of the system for a minimum

of 10 minutes. Additionally, a representative sampling of at least 10% of total point-of-use water outlets served by the new portion of the system, must be tested for lead, copper, and total coliform bacteria (including E. coli) by a qualified professional before use.

- (a) Prioritization must be given to water outlets primarily designed for human consumption (e.g., drinking fountains, bottle fillers, and faucets in kitchenettes) and then moving to water outlets used for human washing. Only sample cold water outlets for metals, do not sample hot water outlets or outlets with automatic mixing valves.
- (b) Test results that exceed the applicable federal, state, or local thresholds must result in remedial actions to reduce concentration levels.
- (c) If applicable, post-remediation water testing on failed water outlets by a qualified professional is required before use.

(4) Any water system that plans to partially replace a lead service line must undertake specific actions per EPA's Lead and Copper Rule. These actions encompass notifying customers with suitable response measures, furnishing pitcher or point-of-use filters, and extending the option for follow-up testing. Federally owned facilities are required to adhere to the instructions provided by the water system and take advantage of the offered testing when presented.

- b) Incidents, Complaints, and Emergencies. In response to incidents, complaints, and emergencies related to DW, it is the responsibility of GSA, the Delegated Agency, or the Lessor (if a provision of the lease) to promptly investigate such complaints in federally owned and leased facilities under the jurisdiction, custody, or control of GSA (including facilities operating under a GSA delegation). The investigation process must include:
- i) Efforts to identify the nature and source of the suspected DW issue, which may involve conducting confirmatory water testing by a qualified professional.
  - ii) If the investigation confirms the presence of a DW issue, appropriate corrective action must be initiated to address and remediate the source of the problem and notification to each affected occupant agency point of contact must occur per the requirements of PBS 2400.1 *Risk Management Notification* (January 8, 2021)

- (1) Follow-up testing by a qualified professional must be conducted after implementing corrective actions to ensure the effectiveness of the measures taken.
  - (2) To ensure that the problem is confined to the original incident area, the regional EHSF program office responsible for DW will use their professional judgment to decide whether additional testing outside of the initial area of concern is required.
  - iii) In Federally owned facilities under the jurisdiction, custody, and control of GSA, initial DW incidents, complaints, and emergencies reported through the GSA O&M Contractor or GSA Facility Manager channels must be documented and maintained in NCMMS for record-keeping purposes.
- 9) PBS Desk Guide for Drinking Water Quality Management. The PBS Desk Guide for DW Quality Management serves as a practical resource for national and regional implementation of the PBS DW Quality Management Order. It provides additional guidance, procedures, and best practices for addressing specific DW issues and managing DW programs effectively and is linked below.
- 10) Signature.

/S/ \_\_\_\_\_

ELLIOT DOOMES  
Commissioner  
Public Buildings Service

**Attachment:** PBS Desk Guide for Drinking Water Quality Management



# **Desk Guide for Drinking Water Quality Management**

*Companion to*

*GSA Order PBS 1000.7A*

**Public Buildings Service (PBS)  
Office of Facilities Management  
Facility Risk Management Division**

**November 16, 2023**

## Table of Contents

<b>Introduction</b>	<b>3</b>
<b>Guidance</b>	<b>3</b>
Water Systems	3
Types of Water Systems	3
Regulations	3
Proactively Maintaining DW	5
Privately Owned or Operated Water Systems	5
Consumer Confidence Reports (CCR)	7
PBS Guidance to Maintain or Restore Water Quality	7
Routine Flushing of Focus Areas	8
Baseline Water Testing	9
Water Testing After New Installation	10
Child Care Centers (CCC)	12
Use of Lead in Potable Water Systems	14
Utilizing Cold Water for Cooking and Drinking	15
Reactively Responding to Incidents, Complaints, and Emergencies	15
Legionella	16
DW Assessments	19
Other Considerations	20
Sampling Methodology & Protocols	20
Data Applicability	20
Associated Costs	21
Helpful Resources	21

## Introduction

The Drinking Water (DW) Quality Management Desk Guide serves as a practical resource for national and regional implementation of the DW Quality Management Order. It provides additional guidance, procedures, and best practices for addressing specific DW issues and managing DW programs effectively.

## Guidance

### Water Systems

#### Types of Water Systems

The United States (U.S.) Environmental Protection Agency (EPA) outlines several primary types of water systems based on the population served and the type of users:

- 1) **Public Water Systems (PWS):** A PWS provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year. EPA has defined three types of PWS:
  - a) **Community Water System (CWS):** A PWS that supplies water to the same population year-round.
  - b) **Non-Transient Non-Community Water System (NTNCWS):** A PWS that regularly supplies water to at least 25 of the same people at least six months per year. Some examples are schools, factories, office buildings, and hospitals which have their own water systems.
  - c) **Transient Non-Community Water System (TNCWS):** A PWS that provides water in a place such as a gas station or campground where people do not remain for long periods of time.
  
- 2) **Private Water Systems:** Private Water Systems are water systems that are not subject to regulation under the EPA Safe Drinking Water Act (SDWA). These systems usually serve fewer people and are often found in rural or remote areas. Private wells and springs that serve individual households or small groups of people are typical examples of private water systems.

#### Regulations

The Safe Drinking Water Act, 42 U.S.C. § 300f, *et seq.*, (SDWA) is a crucial federal law enacted by the EPA in 1974 to safeguard the nation's public DW supply. The SDWA establishes and enforces standards for the quality of DW provided by PWS to protect public health. It distinguishes between two types of standards: primary standards and secondary standards. [National Primary Drinking Water Regulations \(NPDWR\)](#) set legally enforceable Maximum Contaminant Levels (MCLs) for specific contaminants known to pose significant health risks, such as microorganisms, disinfectants, disinfection byproducts, inorganic

chemicals, organic chemicals, and radionuclides. Compliance with these MCLs is mandatory for PWS. On the other hand, [National Secondary Drinking Water Regulations \(NSDWRs\)](#) are non-enforceable guidelines that address aesthetic properties of DW (like taste, odor, and color) which do not pose direct health risks but can affect the water's acceptability.

Below is a high-level summary of the DW regulations for each of the different types of water systems listed above:

- 1) PWS:
  - a) A CWS is subject to more comprehensive regulations under the SDWA. Some key components include:
    - i) MCLs: The EPA sets MCLs for various contaminants to establish the maximum allowable concentrations in DW. These include various microorganisms, disinfectants, disinfection byproducts, inorganic chemicals, organic chemicals, and radionuclides.
    - ii) Treatment Techniques: For certain contaminants where setting an MCL is not feasible, the EPA imposes treatment techniques to reduce the levels of those substances in DW.
    - iii) Monitoring and Reporting: CWS must regularly monitor and report the quality of their water to ensure compliance with the EPA's standards.
  - b) A NTNCWS is subject to similar regulations as CWS, with some specific considerations for non-residential facilities.
  - c) A TNCWS also adheres to the SDWA regulations, but it has monitoring and reporting requirements tailored to its transient nature.
- 2) Private Water Systems: Private water systems are not subject to the same federal regulations as PWS under the SDWA. The [EPA](#) and the [Centers for Disease Control and Prevention \(CDC\)](#) recommend voluntary guidelines for private well owners to ensure the safety of their DW. Additionally, states and local authorities may have specific regulations or requirements for private water systems.

In cases where the state has the primary authority to enforce regulations for PWS, its definition of a PWS may differ from the EPA's definition. However, it is essential to note that a state's definition must be at least as strict as the EPA's definition. For example, the state might require a smaller number of service connections to classify as a PWS, but it cannot define a PWS as anything larger than 15 service connections or an average of 25 people served by the system. Alternatively, in some states, if a system is not considered a PWS according to the EPA but provides a DW fountain or has a bathroom open to the public, it would be considered a PWS according to the state's definition. Additionally, while the EPA sets federal DW regulations, individual states or local authorities can also establish their own DW



requirements which may be more stringent than the federal standards. Water systems are obligated to comply with regulations at the federal, state, and local levels.

As a final note, once a Federal facility receives acceptable water from the water system, it becomes the responsibility of the facility's controlling authority (whether it is PBS, a lessor, or an agency with delegated authority) to provide potable water at point-of-use outlets. OSHA [29 CFR 1910.141\(b\)\(1\)\(i\)](#) mandates that potable water must be provided in all places of employment for various purposes, including: drinking, washing of individuals, cooking, washing of foods, cleaning cooking or eating utensils, washing food preparation or processing areas, and personal service rooms. OSHA defines potable water as water that meets the drinking standards set by the state or local authority with jurisdiction or water that complies with the quality standards prescribed by the EPA's NPDWR.

The potable water system of a facility typically includes the point of entry service line(s), mechanical equipment (e.g., backflow preventers; in-line filtration including strainers; pressure/expansion tanks; water treatment devices including softeners; boilers, hot water tanks, and other in-line water heating devices; hot water recirculation pumps and balancing valves; and other specialty equipment, if applicable), primary cold and hot water pipes, and point-of-use outlets.

## **Proactively Maintaining DW**

### **Privately Owned or Operated Water Systems**

Ownership of a water system has no bearing on whether it is a PWS. As mentioned above, a PWS is defined by the number of people served and the number of connections. However, private water systems are almost exclusively privately owned, as the name implies. The controlling authority for federally owned and leased facilities under the jurisdiction, custody, or control of the U.S. General Services Administration (GSA) (including facilities operating under a GSA delegation of authority) is responsible for ensuring compliance with applicable federal, state, and local DW regulations for the water systems they own or operate. Depending on the facility, this would be the responsibility of PBS, a lessor, or an agency with delegated authority to operate and maintain the facility.

A privately-owned PWS is regulated by federal, state, or local regulations as discussed above. These facilities are subject to a variety of requirements including but not limited to: system operator certification, routine testing, system preventative maintenance, recordkeeping, and periodic inspections by the authority having jurisdiction often called sanitary surveys. Check with the applicable authority to determine what is required for the specific system. Typical records to be maintained can include:

- 1) DW well construction logs and permits.
- 2) DW system operator training and certification records.
- 3) DW system permit and plans.
- 4) Sampling plan and results.

- 5) Preventive maintenance records.
- 6) System upset and repair records.
- 7) Records of required notifications, such as testing results, boil orders, and other required notices.
- 8) Copies of inspections and sanitary survey reports by the authority having jurisdiction, notices of violation, corrective action orders, etc.

Smaller private water systems that do not meet the definition of a PWS are often not fully regulated by federal, state, or local DW regulations. However, their DW wells are generally still required to meet specific well construction requirements and be installed by a certified or licensed DW well driller. If applicable, the well logs from these wells must be passed along to the state or local DW authority to be included in their well water databases. In the absence of federal, state, or local regulations, GSA requires the following sampling to be conducted to ensure the water is potable for federally-owned facilities under the jurisdiction, custody, and control of the GSA:

- 1) Initial Testing: After the installation of the well system, the owner or operator of the system must ensure compliance with state and local testing requirements for new well installation. Additionally, the need for addressing other germs or harmful chemicals will depend on the well's location on the property, the state the property resides in, and whether it is located in an urban or rural area. To determine if any specific contaminants are a concern in the specific region, consult with the local health or environmental department or the EPA.
- 2) Routine Testing:
  - a) Weekly: Disinfectant and disinfectant byproduct, if applicable.
  - b) Monthly: Total coliform bacteria [including *Escherichia coli* (*E. coli*)]; one raw water sample from the wellhead and one water sample from the distribution system, rotated each month.
  - c) Annually: Nitrates, total dissolved solids, and pH.

Additional testing is required if:

- 1) There are known problems with well water in the area.
- 2) There are past problems near the well (i.e., flooding, land disturbances, or nearby waste disposal sites).
- 3) Replacement or repair of any part of the well system.
- 4) There is a change in water quality (i.e., taste, color, or odor).

Data management must be consistent with the state or local DW requirements. For systems that are not regulated by the state or locality, documentation must be uploaded to National Computerized Maintenance Management System (NCMMS) for federally-owned facilities under the jurisdiction, custody, and control of the GSA.

If the testing results confirm the presence of a DW issue:

- 1) Notify the regional environmental, health, safety, and fire protection (EHSF) program office responsible for DW.
- 2) If applicable, notify affected occupants per [PBS 2400.1 Risk Management Notification](#) of DW concerns that could impact their health.
- 3) Initiate appropriate corrective action to address and remediate the source of the problem.

### **Consumer Confidence Reports (CCR)**

CCR are an essential requirement mandated by the EPA that necessitates the annual dissemination of information regarding the quality and safety of DW supplied to building occupants. These reports play a crucial role in keeping consumers informed about the quality of their DW and ensuring transparency in water management practices. By providing comprehensive details on the sources of DW, any detected contaminants, and the measures taken to ensure water safety, CCRs empower individuals to make informed decisions about their water consumption. Furthermore, the reports highlight compliance with regulatory standards and outline any necessary actions taken to address water quality issues. By receiving CCRs annually, building occupants can gain confidence in their water supply, fostering trust and promoting a healthy and safe environment for all.

CCRs are published on an annual basis, usually by July 1st. Notifications regarding these releases are generally sent to the individual listed on the water bill or published on the Water System's website. An easy way to locate these is by conducting an internet search for "*City, State Water Quality Reports CCR*", which often yields precisely the information you need. These must be reviewed annually by the operations and maintenance (O&M) contractor and, if any issues are noted, notification is to be provided to the COR and documented in the PBS NCMMS. As a result, GSA or the delegated agency must provide notification to each affected occupant agency point of contact. EPA has additional information available on [CCR](#).

### **PBS Guidance to Maintain or Restore Water Quality**

The COVID-19 pandemic has significantly impacted how buildings are occupied and utilized for the foreseeable future. The adoption of remote work has been accelerated, leading to a change in building utilization. It has also highlighted the importance of managing buildings that prioritize the health and well-being of their occupants.

These changes in building utilization, combined with the best practices learned during the pandemic, necessitate the assurance that building potable water systems are providing fresh water at point-of-use outlets. Stagnation can occur within building water systems when water remains still within the plumbing network due to non-usage, leading to the development of water quality issues. Stagnation events can occur in buildings with an overestimated design capacity, during seasonal building use (e.g., schools during summer), construction activities, periods between occupancy, natural disasters, and

changes to building operations (e.g., "stay-at-home" orders during the COVID-19 pandemic or increased telework).

To address these concerns, all federally owned facilities, including facilities operating under a GSA delegation of authority, regardless of occupancy levels, must implement the [PBS Guidance to Maintain or Restore Water Quality](#) if they meet the following criteria:

- 1) Buildings over 50,000 sqft. with water booster pumps (both conditions must apply); or
- 2) Buildings over six stories.

As part of the guidance, the O&M contractor must assess the building's plumbing system and is responsible for developing a water sampling and flushing plan. Buildings will use this guidance, as may be amended from time to time, unless a building-specific ASHRAE 514 water management program (WMP) or ASHRAE 188 water management plan has been implemented for the potable water system.

To the extent that compliance with the PBS Guidance to Maintain or Restore Water Quality is insufficient for the specific circumstances of the facility, such as a history of water issues involving opportunistic pathogens or facing challenges in maintaining consistent chlorine levels, hot water temperatures, or overall water quality, developing an ASHRAE 514 WMP or ASHRAE 188 water management plan that aligns with ASHRAE Guideline 12 for the potable water system is required. Moreover, facilities seeking a customized and holistic approach can benefit from an ASHRAE 514 WMP or ASHRAE 188 water management plan by implementing tailored strategies, advanced monitoring techniques, and preventive measures to mitigate risks and optimize water management practices. All contractors involved in the development of WMP must possess the ASSE 12080 Legionella Water Safety and Management Specialist Certification or its equivalent.

### **Routine Flushing of Focus Areas**

Active federally owned facilities under the jurisdiction, custody, and control of the GSA (including facilities operating under a GSA delegation of authority) must conduct weekly flushing of specific focus areas. These areas are identified based on the populations they serve and the nature of their operations. These include:

- 1) Health Units;
- 2) Child Care Centers (as also noted below); and
- 3) Building Common and Private Tenant Showers.

For water outlets in Health Units and Child Care Centers, it is required to:

- 1) Locate the furthest outlet from the incoming source in the focus area, run both the hot and cold water, and let the water run for 10 minutes.
- 2) Open the cold water at each outlet and let the water run for one minute or longer until it reaches the minimum cold water temperature.
- 3) Open the hot water at each outlet either simultaneously or independently from the cold water. Allow the water to run for at least one minute or longer until it reaches its maximum hot water temperature.
- 4) Run all refrigerated water fountains for a minimum of 3-5 minutes.

For building common and private tenant showers, it is required to:

- 1) Flush hot and cold water until the temperatures stabilize or a disinfectant residual is detectable.

Furthermore, the aerators must be cleaned or replaced monthly if damaged.

- 1) An effective way to remove the need for monthly aerator maintenance is to replace aerators with laminar flow devices.

Additionally, if applicable and feasible, dead-end legs of domestic water systems identified during routine maintenance must be flushed monthly.

### **Baseline Water Testing**

It is of significant importance that all active and occupied federally owned facilities under the jurisdiction, custody, and control of the GSA with drinking water systems that are over 1,000 SF (which also encompass facilities operating under a GSA delegation of authority) adhere to stringent drinking water testing requirements. Baseline DW quality testing will be required in FY24. Specifically, at least 10% of cold water outlets primarily designed for human consumption, such as drinking fountains, bottle fillers, and kitchenette faucets, must be tested for lead, copper, and total coliform bacteria (including E. coli). Test results that exceed the applicable federal, state, or local thresholds, must result in remediation actions to reduce concentration levels. It is essential to conduct post-remediation water testing on failed outlets before resuming their use.

Additionally, there is a need to sample a representative number of hot and cold water outlets for the presence of legionella. Legionella sampling locations should encompass all of the following where applicable:

- 1) Incoming Municipal Water - 1 sample per service line.
- 2) Storage Tank(s) - 1 sample per tank.
- 3) Expansion tank(s) - 1 sample per tank.

- 4) Hot water circulation circuit(s) - 1 sample per plumbing riser.
- 5) Building common and private tenant showers - at least 1 sample for every 3 fixtures.
- 6) If applicable, all point-of-use outlets that are primarily designed for human consumption in a Child Care Center for both hot (where applicable) and cold water.
- 7) If applicable, all point-of-use outlets that are primarily designed for human consumption or treatment of patients in a Health Unit for both hot (where applicable) and cold water.
- 8) 10% of all of the remaining point-of-use outlets primarily designed for human consumption, such as drinking fountains, bottle fillers, and kitchenettes focusing on distal locations for both hot (where applicable) and cold water. In smaller facilities, this must include at least five outlets.

If systems are well controlled, as defined by CDC guidance, no further action is required. However, if systems are poorly controlled or uncontrolled, further response action is needed.

The regional EHSF program office responsible for DW will use their professional judgment to decide whether additional testing is necessary based on the baseline test results.

### **Water Testing After New Installation**

Assessment of new point-of-use water outlets used for human consumption or washing purposes is a crucial step that ensures these systems' safe operation when certain components of the water system are impacted during repair or renovation projects. This involves an evaluation process to verify that these systems comply with regulatory standards after installation. By conducting this testing, any potential issues or deficiencies can be identified and addressed early on, reducing the risk of costly repairs, inefficiencies, or water quality problems in the future. It is required in these scenarios:

- 1) All newly installed outlets used for human consumption or washing purposes must be thoroughly flushed for a minimum of 10 minutes.
  - a) Use a detectable level of disinfectant residual to indicate that flushing has been successful for cold water.
  - b) Use the maximum hot water temperature allowed by regulations and codes, or between 120°F (49°C) to 124°F (51°C) to indicate that flushing has been successful for hot water. For outlets with automatic mixing valves, flush until the water temperature stabilizes as the water will be premixed with cold water.
- 2) All newly installed water outlets primarily designed for human consumption (e.g., drinking fountains, bottle fillers, and faucets in kitchenettes) must be tested for lead, copper, and total coliform bacteria (including E. coli) by a qualified professional before use.
  - a) Outlets primarily designed for washing (e.g., bathroom sinks) do not apply, except as outlined above in CCC.

- b) Test results that exceed the applicable federal, state, or local thresholds must result in remediation actions to reduce concentration levels.
  - c) If applicable, post-remediation water testing on failed water outlets is required before use.
- 3) When replacing building service lines and primary pipes (e.g., riser and headers), comply with applicable plumbing code disinfection requirements. Additionally, representative testing of at least 10% of total point-of-use water outlets served by the new portion of the system, must be tested for lead, copper, and total coliform bacteria (including E. coli) by a qualified professional before use.
  - a) Prioritization must be given to outlets primarily designed for human consumption (e.g., drinking fountains, bottle fillers, and faucets in kitchenettes) and then moving to outlets used for human washing. Only sample cold water outlets for metals, do not sample hot water outlets or outlets with automatic mixing valves.
  - b) Test results that exceed the applicable federal, state, or local thresholds must result in remediation actions to reduce concentration levels.
  - c) If applicable, post-remediation water testing on failed water outlets is required before use.
- 4) When a water system plans to partially replace a lead service line that provides DW to a facility, it's crucial to be aware of the following steps and considerations that the water system is required to follow in accordance with the EPA's Lead and Copper Rule ([40 CFR Part 141 Subpart J](#)):
  - a) Notification and Awareness: Expect to receive a notification from the water system outlining the impending pipe replacement. This notification will explain that temporary increases in lead levels within DW might occur during the replacement process. It will also provide information about the health effects of lead exposure and suggest actions you can take to minimize risk.
  - b) Flushing Procedures: Before the service line is reinstated, the water system will share instructions on proper flushing. This is important to maintain water quality and safety.
  - c) Provision of Filters and Devices: Anticipate receiving pitcher filters or point-of-use devices certified to reduce lead content. The water system will provide these devices along with six months worth of replacement cartridges and clear usage instructions.

- d) Follow-Up Tap Sampling: The water system must offer to collect a follow-up tap sample three to six months after the partial replacement of a lead service line.

Federally owned facilities under the jurisdiction, custody, and control of the GSA (including facilities operating under a GSA delegation) are required to adhere to the instructions provided by the water system and take advantage of the offered testing when presented.

### **Child Care Centers (CCC)**

Ensuring high-quality DW in CCC is of utmost importance. Young children are particularly vulnerable to the harmful effects of heavy metals, as their developing bodies and brains are more susceptible to their toxic effects. Lead and copper can leach into DW from plumbing systems, posing health risks when consumed. Regular maintenance and water testing help to prevent elevated levels of these contaminants and allow prompt action to be taken to help ensure the safety of the children.

GSA has crafted its guidance for CCC, based on the core principles from the [EPA's 3Ts \(Training, Testing, and Taking Action\)](#) document.

Regular weekly flushing of cold and hot water outlets is a vital practice in CCC to help ensure DW quality. By running water through the plumbing system on a consistent basis, stagnant water and potential contaminants (including heavy metals and bacteria) are flushed out. Flushing prevents the buildup of sediment, rust, and biofilms, reducing the risk of microbial growth and maintaining optimal water flow. It is particularly effective in reducing lead concentrations by removing water in contact with old pipes or fixtures. It is required in these scenarios:

- 1) Hot and cold water point-of-use outlets with the realistic potential to be used as a drinking water source in CCC must be flushed weekly as outlined above. This must take place on the morning of the first regular business day of each week. Furthermore, the aerators must be cleaned or replaced monthly if damaged.
  - a) An effective way to remove the need for monthly aerator maintenance is to replace aerators with laminar flow devices.

Regular water testing helps identify elevated levels of heavy metals and bacteria, enabling prompt action. By detecting potential sources of lead and copper (such as old pipes or fixtures) or bacteria resulting from water stagnation through testing, corrective actions can be taken to ensure that CCCs provide a clean and healthy environment for young children to learn and grow. Testing for lead, copper, and legionella is required in these scenarios:

- 1) DW outlets in open CCCs must be sampled and evaluated for lead and copper by a qualified professional annually at a minimum. This testing must include all water sources with the realistic potential to be used as DW sources, such as those used for human consumption and washing.



Test results that exceed the applicable federal, state, or local thresholds must result in remedial actions to reduce concentration levels.

The regional EHSF program office responsible for DW will use their professional judgment to decide whether additional testing outside of the CCC is necessary based on the annual test results.

GSA has developed a [Standard Operating Procedure \(SOP\)](#) to guide the annual testing events in CCC. This SOP includes a comprehensive [scope of work \(SOW\)](#) for the annual testing. Additionally, it outlines the necessary planning, execution, and response actions that must be undertaken. The SOP ensures that a structured approach is followed to maintain consistency and effectiveness throughout the testing process.

- 2) Any CCC closed for 30 consecutive calendar days or more must be sampled and evaluated for lead and copper by a qualified professional approximately two to three weeks before reopening and with sufficient time for PBS to review the results and act on any issues before opening day. This testing must include all water sources with the realistic potential to be used as DW sources, such as those used for human consumption and washing. Test results that exceed the applicable federal, state, or local thresholds must result in remediation actions to reduce concentration levels.

Additionally, all water outlets primarily designed for human consumption (e.g., drinking fountains, bottle fillers, and faucets in kitchenettes) must be tested for legionella. If systems are maintained in a well-controlled manner, as defined by CDC guidance, no further action is required. However, if systems are noted to be poorly controlled or uncontrolled, further response action is needed.

Finally, water testing after new installations in CCC is required. This process ensures that the water systems in CCC are designed, installed, and operated correctly, meeting the required water quality and safety standards. It is required in these scenarios:

- 1) All newly installed water outlets with the realistic potential to be used as a DW source must be thoroughly flushed for a minimum of 10 minutes.
  - a) Use a detectable level of disinfectant residual to indicate that flushing has been successful for cold water.
  - b) Use the maximum hot water temperature allowed by regulations and codes, or between 120°F (49°C) to 124°F (51°C) to indicate that flushing has been successful for hot water. For outlets with automatic mixing valves, flush until the water temperature stabilizes as the water will be premixed with cold water.

- 2) All newly installed water outlets with the realistic potential to be used as DW sources (such as those used for human consumption and washing) must be tested for lead, copper, and total coliform bacteria (including E. coli) by a qualified professional prior to use. Test results that exceed the applicable federal, state, or local thresholds, must result in remediation actions to reduce concentration levels.

As an additional note, please be aware that state or local regulations may impose more stringent requirements in CCC than those mandated by the GSA. In such instances, you must adhere to the most stringent requirements.

The [EPA 3Ts](#) document offers comprehensive guidance on remediation efforts that can be implemented in response to levels of metal above federal, state, or local thresholds. After addressing the issues, it is essential to conduct post-remediation water testing on failed water outlets before resuming their use.

### **Use of Lead in Potable Water Systems**

Lead is now strictly prohibited for use in plumbing systems as per the updated requirements set by the EPA. On September 1, 2020, the EPA published the final regulation "Use of Lead-Free Pipes, Fittings, Fixtures, Solder, and Flux for Drinking Water." (40 C.F.R. § 143.10-20) This regulation aligns with the Reduction of Lead in Drinking Water Act (RLDWA) (Pub. L. 111-380, Jan. 4, 2011) and the Community Fire Safety Act (Pub. L. 113-64, Dec. 20, 2013), which amended provisions of the Safe Drinking Water Act,, leading to necessary changes in existing regulations.

The final rule mandated that manufacturers or importers certify their products' compliance with the lead-free requirements through a consistent verification process within three years of the final rule's publication in the Federal Register. This action aimed to reduce lead exposure in DW and establish a common understanding of what constitutes "lead free" plumbing among states, manufacturers, inspectors, and consumers.

To define "lead free," Section 1417 of the SDWA (42 U.S.C. § 300g-6) specified a weighted average of 0.25% lead across the wetted surfaces of a pipe, pipe fitting, plumbing fitting, and fixture, and 0.2% lead for solder and flux. The Act also outlined a methodology for calculating the weighted average of wetted surfaces.

The SDWA strictly prohibits the use of any pipe, pipe or plumbing fitting or fixture, solder, or flux that contains lead after June 1986 in the installation or repair of (i) any public water system; or (ii) any plumbing in a residential or non-residential facility that provides water for human consumption, unless the materials are lead free. The Act also prohibits introducing lead-containing pipes, fittings, fixtures, solder, or flux into commerce, except for specific manufacturing or industrial purposes.

Certain exemptions from the lead-free requirements exist under the SDWA, specifically for plumbing devices used exclusively for non-potable services. Moreover, a list of specific products, such as: toilets, bidets, urinals, fill valves, flushometer valves, fire hydrants, tub fillers, shower valves, service saddles, and water distribution main gate valves that are 2 inches in diameter or larger, are exempt from these regulations.

### **Utilizing Cold Water for Cooking and Drinking**

The EPA suggests employing cold water exclusively for cooking and drinking. This recommendation is based on the following specific factors:

- 1) **Contaminant Dissolution:** Cold water is less conducive to the rapid dissolution of contaminants, (including metals) in comparison to hot water. By using cold water, you reduce the likelihood of expediting the release of such substances from plumbing systems, which can help maintain water quality.
- 2) **Preservation of Disinfectant Residual:** Hot water tends to have less available disinfectant residual in the water supply. This residual along with the hot water temperature are vital for managing and ensuring the safety of water against biological hazards. Opting for cold water helps retain the effectiveness of this disinfection process.

If hot water is required for cooking or drinking, it is recommended to follow a two-step procedure. Begin by drawing water from the cold tap (known for its lower risk of contamination) and subsequently heat it to your preferred temperature. Alternatively, use a point-of-use appliance, such as a coffee or tea maker. This approach allows occupants to enjoy the advantages of hot water without compromising water safety.

### **Reactively Responding to Incidents, Complaints, and Emergencies**

While proactive measures significantly reduce the likelihood of DW incidents, prompt response to unforeseen situations is crucial to ensure safe and healthy DW. There are two primary sources of these events: the water supplied to the building and the building's plumbing.

Facilities have limited control over water quality issues originating from the PWS and can only implement control measures based on notifications from the proper authority. The primary responsibility for maintaining and delivering safe water lies with the PWS, who manages the water source, treatment, and distribution systems. Facilities rely on the PWS to provide clean and safe water for their operations.

When issues like contamination, non-facility construction-related problems, or boil orders occur, facilities must rely on the expertise and actions of the PWS and the responsible authority for water quality management. Facilities receive notifications or advisories from these entities, informing them of the specific issue and necessary precautions.

Facilities respond by implementing control measures based on provided information and instructions, which may involve adjusting operational processes, using alternative water sources, or implementing additional water control measures to ensure compliance with required standards.

Once the facility receives acceptable water from the PWS, the responsibility for providing potable water at point-of-use water outlets falls on the facility's controlling authority, whether it is GSA, a lessor, or an agency with delegated authority. Water quality issues related to a facility's plumbing system can stem from factors such as: corrosion in old pipes, leaks or breaks allowing contaminants to enter, backflow causing the reversal of water flow and introducing non-potable substances, biofilm formation on pipe surfaces, and inadequate maintenance leading to sediment buildup or microbial growth. In the event of incidents, complaints, or emergencies related to DW, it is important for GSA, the Delegated Agency, or the Lessor (if a provision of the lease) to promptly investigate and address the matter. The investigation process includes the following steps:

- 1) Identify the nature and source of the suspected DW issue, which may involve conducting confirmatory tests or measurements to assess initial DW parameters.
- 2) If the investigation confirms the presence of a DW issue:
  - a) Notify affected occupants per [PBS 2400.1 Risk Management Notification](#) of DW concerns that could impact their health.
  - b) Initiate appropriate corrective action to address and remediate the source of the problem.
  - c) Follow-up testing must be conducted after implementing corrective actions to ensure the effectiveness of the measures taken.
  - d) To ensure that the problem is confined to the original incident area, the regional EHSF program office responsible for DW will use their professional judgment to decide whether additional testing outside of the initial area of concern is required.
- 3) Document and maintain records of initial DW incidents, complaints, and emergencies reported through the GSA O&M Contractor or GSA Facility Manager channels in the NCMMS for record-keeping purposes in federally owned facilities under the jurisdiction, custody, and control of the GSA.

By promptly responding to DW incidents and following a systematic investigation process, we can mitigate potential risks and ensure the well-being of building occupants and visitors.

## **Legionella**

Legionella, a bacterium responsible for causing Legionnaires' disease and Pontiac fever, can pose a threat in potable water systems used for DW. While typical sources of potable water inside Federal office

buildings (such as drinking fountains and sinks) are generally considered low-risk routes of legionella exposure, it is important to remain vigilant or respond accordingly to detectable levels or reported cases. To mitigate the risk, it is crucial to adhere to the guidelines provided by the [CDC Prevention and Control](#) website.

These resources offer comprehensive recommendations for building owners, facility managers, and water system operators to respond to Legionella issues, ensuring the safety and well-being of individuals.

When conducting Legionella testing, PBS will adhere to the following guidelines:

- 1) Ensure that Legionella testing is conducted at a laboratory accredited for Legionella analysis in accordance with the international laboratory quality standard ISO 17025:2017. This accreditation should be granted by an accreditation body that is also accredited according to ISO 17011:2017, such as AIHA LAP. Alternatively, the laboratory may be approved by the CDC Environmental Legionella Isolation Techniques Evaluation program or comply with specific state requirements, as dictated by, for example, the New York State Environmental Laboratory Approval Program for New York State.
- 2) Analyze all water samples using the Legionella culture method, which is based on ISO 11731:2017 and/or the methods outlined by the U.S. CDC in their publications from 2005.
- 3) Collect Legionella samples following the [CDC Legionella Sampling Procedure and Potential Sampling Sites](#).

As part of the routine or reactive testing, PBS follows the [CDC Guidance for Routine Testing of Legionella](#) based on:

- 1) Concentration (i.e., CFU/mL).
  - a) Potable water used for drinking: well controlled - detectable to 0.9 CFU/mL, poorly controlled - 1.0 to 9.9 CFU/mL, uncontrolled -  $\geq 10$  CFU/mL.
  - b) Non-potable water used in mechanical systems: well controlled - detectable to 9 CFU/mL, poorly controlled - 10 to 99 CFU/mL, uncontrolled -  $\geq 100$  CFU/mL (*non-potable water is not covered by PBS 1000.7A as this policy and desk guide are specific to drinking water*).
- 2) Extent of colonization (e.g., % positive).
- 3) Type of Legionella (e.g., Legionella pneumophila serogroup 1 vs. other species, serogroups, or sequence types).
- 4) Change in concentration over time.
  - a) If 10 to 100-fold increase for potable water or cooling towers, Legionella growth appears to be poorly controlled.
  - b) If >100-fold increase, Legionella growth appears to be uncontrolled.

If systems are maintained in a well-controlled manner, as defined by CDC guidance, no further action is required. However, if systems are noted to be poorly controlled or uncontrolled, further response action is needed.

If an ASHRAE 514 WMP or ASHRAE 188 water management plan has been developed, take the following actions:

- 1) Notify affected occupants per [PBS 2400.1 Risk Management Notification](#) of DW concerns.
  - a) A draft [notification](#) is provided for situations in which there are no confirmed cases reported, but routine test results indicate either poorly controlled levels of Legionella in a facility serving general-risk or increased-risk populations, or uncontrolled levels of Legionella in a general-risk facility.
  - b) Other situations will likely warrant a different type of notification letter. Additional information can be obtained from the [Legionnaires' Disease Risk Communication Toolkit: Routine Environmental Testing Results in the Absence of Cases Module](#).
- 2) If systems are noted to be in an uncontrolled condition, proactively contact the state or local health department and inform them of the issue.
- 3) If in a health care unit, implement additional control measures as outlined in the [CDC's Things to Consider: Healthcare-associated Cases and Outbreaks](#).
- 4) Review sample collection, handling, and testing for potential errors.
- 5) Confirm that system equipment is in good working order and functioning as intended.
- 6) Review records to confirm that the ASHRAE 514 WMP or ASHRAE 188 water management plan was implemented as designed (verification).
- 7) Review assumptions about operating conditions, such as the physical and chemical characteristics of incoming water.
- 8) Re-evaluate fundamental aspects of the ASHRAE 514 WMP or ASHRAE 188 water management plan, including: analysis of hazardous conditions, cleaning, maintenance procedures, chemical treatment, and other aspects that could affect Legionella testing.
- 9) Adjust ASHRAE 514 WMP or ASHRAE 188 water management plan as necessary to address any deficiencies identified.
- 10) Consider whether remedial treatment is needed only after completion of the above.
- 11) If remedial treatment was performed, wait at least 48 hours after the system returns to normal operating conditions and retest a set of representative samples to confirm the effectiveness of the response.

If an ASHRAE 514 WMP or ASHRAE 188 water management plan has not been developed, take the following actions:

- 1) Notify affected occupants per [PBS 2400.1 Risk Management Notification](#) of DW concerns.
  - a) A draft [notification](#) is provided for situations in which there are no confirmed cases reported, but routine test results indicate either poorly controlled levels of Legionella in

a facility serving general-risk or increased-risk populations, or uncontrolled levels of Legionella in a general-risk facility.

- b) Other situations will likely warrant a different type of notification letter. Additional information can be obtained from the [Legionnaires' Disease Risk Communication Toolkit: Routine Environmental Testing Results in the Absence of Cases Module](#).
- 2) If systems are noted to be in an uncontrolled condition, proactively contact the state or local health department and inform them of the issue.
  - 3) If in a health care unit, implement additional control measures as outlined in the [CDC's Things to Consider: Healthcare-associated Cases and Outbreaks](#).
  - 4) Review sample collection, handling, and testing for potential errors.
  - 5) Confirm that system equipment is in good working order and functioning as intended.
  - 6) Review records from the [PBS Guidance to Maintain or Restore Water Quality](#) to identify potential issues.
  - 7) Conduct immediate flushing of the impacted areas.
  - 8) Review and implement steps outlined in the [CDC Prevention and Control](#) website for the correct type of water system that is impacted.
  - 9) Consult with a specialized contractor for additional response actions.
  - 10) Conduct additional sampling to verify corrective action has been successful.
  - 11) If corrective action is not successful, develop an ASHRAE 514 WMP or ASHRAE 188 water management plan that aligns with ASHRAE Guideline 12. This must be done using contractors who hold the ASSE 12080 Legionella Water Safety and Management Specialist Certification or an equivalent certification.

If a confirmed case of Legionnaires disease is reported, it is crucial to escalate the issue promptly and adhere to the guidelines provided by the [CDC Environmental Investigation Resources](#).

[AIHA Recognition, Evaluation, and Control of Legionella in Building Water Systems](#) (accessible to GSA employees only and upon request) also provides a great resource for more detailed information.

## DW Assessments

The assessment and management of DW issues depend on the specific nature of the complaint or incident. Commonly considered parameters for DW assessments include those from the NPDWR, such as lead, copper, and total coliform bacteria (including E. coli), which can be attributed to building systems.

However, it's important to note that the selection of parameters (whether from the NPDWR or others) may vary based on the circumstances, and each DW issue requires a tailored approach. The parameters to be assessed must be determined on a case-by-case basis depending on the incident's nature.

Qualified professionals with a comprehensive understanding of the incident and potential factors at play must be responsible for planning and conducting DW assessments. By adopting a flexible approach and

considering a range of parameters, these professionals can effectively diagnose DW problems and implement appropriate corrective actions to address occupants' specific concerns. Some cases may involve evaluating all the aforementioned parameters, while others may focus on specific contaminants as needed.

## Other Considerations

### Sampling Methodology & Protocols

Sampling methodology and protocols for assessing DW must adhere to applicable regulations, standards, and guidelines. Key considerations include:

- 1) **Regulatory Compliance:** Follow regulations and guidelines set by governmental agencies or industry bodies.
- 2) **Standardized Guidelines:** Refer to established guidelines from organizations like the EPA, CDC, ASHRAE, American Society for Testing Materials (ASTM), and the American Industrial Hygiene Association (AIHA).
- 3) **Equipment Selection:** Choose appropriate sampling equipment. Note that sample bottles are often provided by the laboratory.
- 4) **Sample Collection Locations:** Choose representative locations based on the specific characteristics of the incident, complaint, or emergency, as well as considering the type of occupancy.
- 5) **Sample Handling:** Follow all federal, state, local, and laboratory procedural requirements for sample preservation, storage, and hold times.
- 6) **Chain of Custody:** Establish a documented chain of custody to maintain sample integrity.
- 7) **Laboratory Analysis:** Send samples to accredited laboratories following recognized methods and quality control procedures.
- 8) **Data Interpretation:** Interpret results in accordance with applicable regulations and reference values.

By following these protocols, GSA can ensure accurate and reliable DW assessments to make informed decisions.

### Data Applicability

It is important for the regional EHSF program office responsible for DW or the qualified professional conducting sampling to understand how and when these requirements must be applied to characterize DW conditions taking into account the following considerations:



- 1) Regulatory Compliance: Ensure that the sampling data aligns with the relevant federal, state, and local regulations and standards for DW quality.
- 2) Comparative Analysis: Use the sampling data to compare against established guidelines, such as those from the EPA, CDC, AIHA, or ASHRAE, to assess the water's safety and quality.
- 3) Trend Analysis: If possible, monitor and track the sampling data over time to identify any trends or changes in water quality, which may indicate potential issues or improvements.
- 4) Source Identification: Use the sampling data to identify potential sources of contamination or problems in the potable water system.
- 5) Decision Making: Make informed decisions regarding the implementation of corrective actions or potential water treatment strategies based on the sampling data and its analysis.

### **Associated Costs**

The responsibility for investigating and resolving the aforementioned building conditions typically falls on GSA, the Delegated Agency, or the Lessor, as they are responsible for basic building operations. However, if the adverse DW condition is caused by factors beyond the control of the GSA, the Delegated Agency, or the Lessor, the costs may be transferred to the occupant agency, contractor, or other responsible entity. In such cases, the responsible party for the condition may be liable for the associated expenses.

Similarly, if an occupant agency or entity requests a specific DW test or investigation for a parameter that is highly unlikely to be present in the given situation, the occupant agency may be responsible for bearing the associated costs to perform that test or investigation.

### **Helpful Resources**

- 1) [EPA: "3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities"](#)
- 2) [U.S. Centers for Disease Control and Prevention \(CDC\): "Toolkit for Controlling Legionella in Common Sources of Exposure"](#)
- 3) [ASHRAE: Standard 514-2023 Risk Management for Building Water Systems: Physical, Chemical, and Microbial Hazards](#) (accessible to GSA employees only and upon request)
- 4) [ASHRAE: Standard 188-2021 Legionellosis: Risk Management for Building Water Systems](#) (accessible to GSA employees only and upon request)
- 5) [ASHRAE: Guideline 12-2023 Managing the Risk of Legionellosis Associated with Building Water Systems](#) (accessible to GSA employees only and upon request)

- 6) [American Industrial Hygiene Association \(AIHA\): Recognition, Evaluation, and Control of Legionella in Building Water Systems 2nd Edition](#) (accessible to GSA employees only and upon request)
- 7) [American Water Works Association \(AWWA\): Responding to Water Stagnation in Buildings with Reduced or No Water Use](#)
- 8) [International Association of Plumbing & Mechanical Officials \(IAPMO\): Tips and Recommendations for the Safe and Efficient Flushing of Plumbing Systems in Buildings](#)