

Guía de descarga de agua para los sistemas de agua de los edificios después de un cierre prolongado

División de Calidad del Agua de la Comisión de Servicios Públicos de San Francisco

Durante el funcionamiento normal de los edificios, el uso de agua por parte de sus ocupantes mantiene el agua fresca dentro de las tuberías del edificio. Cuando los edificios están vacíos por mucho tiempo, el agua estancada puede deteriorarse y crear problemas de calidad. Estos problemas pueden ser estéticos, que afectan el sabor, el olor o la claridad del agua, o bien pueden estar relacionados con la salud debido al crecimiento bacteriano por la pérdida de un desinfectante residual en el agua o por la filtración de metales (por ejemplo, el plomo) de las tuberías. Esta guía ofrece consejos para volver a poner en funcionamiento de forma segura los sistemas de agua de los edificios después del período de refugio en el lugar de San Francisco.

La descarga de agua trae desinfectante del sistema municipal que puede ayudar a controlar el crecimiento biológico. Cuanto mayor sea la interrupción del servicio, mayor será el esfuerzo necesario para restablecer la calidad del agua. La guía de descarga de agua se divide en dos secciones: (1) guía para todos los edificios y (2) guía adicional para los edificios grandes. Los grandes edificios se definen como edificios de 40 o más pies de altura (es decir, 4 o más pisos). Esta guía se basa en información reciente de la Asociación Americana de Obras Hidráulicas (AWWA), el Instituto de Ciencias, Políticas e Investigación del Medio Ambiente (ESPRI) y los Centros para el Control y la Prevención de Enfermedades (CDC). Dado que la información se actualiza rápidamente durante COVID-19, toda la guía se actualizará según corresponda.

Guía para todos los edificios

SFPUC ha identificado la siguiente guía de descarga de agua para todos los edificios que han experimentado períodos de cierre significativos. Si no está familiarizado con la plomería de su edificio, considere la posibilidad de contratar a un plomero para que lo ayude con la descarga de agua.

1. Inspeccione y trace un mapa del sistema de agua de sus instalaciones, incluido el lugar por el que entra el agua en las instalaciones y todos los dispositivos y las conexiones relacionados con el agua (por ejemplo, bebederos de agua potable, inodoros, duchas, sistemas de irrigación, calentadores de agua, dispositivos de tratamiento de agua, grifos de cocina y baño, baberos de manguera, lavajos, etc.).
2. Quite, aisle o desvíe dispositivos como unidades de tratamiento, sistemas de refrigeración, sistemas de irrigación, etc.
3. Tome medidas para evitar el contraflujo o el arrastre de contaminantes a las tuberías (por ejemplo, cerrar las válvulas que separan los sistemas de irrigación de las tuberías del edificio, desconectar las mangueras de los grifos, etc.).
4. Asegúrese de que todos los desagües estén abiertos para evitar inundaciones.
5. Organice la descarga para maximizar el flujo de agua. Abra varias salidas simultáneamente para limpiar la línea de servicio y luego enjuagarlas individualmente empezando cerca de donde el agua entra en la instalación.
6. Deje correr el agua por todas las salidas (por ejemplo, baberos de manguera, grifos, duchas, fluxómetros, etc.), y retire los aireadores cuando sea posible. La duración típica en los protocolos existentes varía de 10 a 30 minutos para cada salida.
7. Descargue primero las redes de agua fría y luego las de agua caliente. También asegúrese de vaciar y enjuagar todos los sistemas o aparatos que almacenan agua (por ejemplo, tanques de agua caliente). En los edificios pequeños, el tanque de agua caliente puede vaciarse directamente; de lo contrario, puede requerir hasta 45 minutos para vaciar completamente un tanque de agua caliente típico de 40 galones. Se puede detectar si la descarga fue adecuada cuando el grifo de agua caliente se enfría.
8. Descargue el agua hasta que el aire sea purgado de las redes y se disipe el agua descolorida o turbia (normalmente el aire arrastrado dará al agua un aspecto blanquecino y lechoso).

de edificios deberían considerar las posibilidades de utilizar parte del agua estancada con un fin benéfico, como el riego de jardines o la limpieza de aceras.

Referencias

Asociación Americana de Obras Hidráulicas (AWWA), Abril de 2020 – Aviso sobre el regreso al servicio de los hogares www.awwa.org/Resources-Tools/Resource-Topics/Coronavirus#10681543-shutoffs-and-return-to-service-guidance

ANSI/ASHRAE, 2019 – Norma 188-2018, Legionellosis: Gestión de riesgos para sistemas de agua de edificios www.ashrae.org/technical-resources/bookstore/ansi-ashrae-standard-188-2018-legionellosis-risk-management-for-building-water-systems

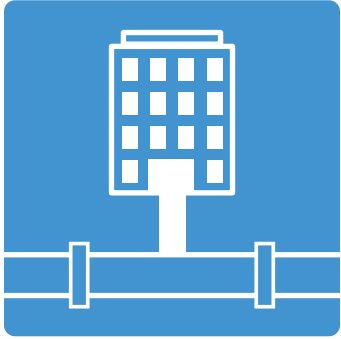
Centros para el Control y la Prevención de Enfermedades (CDC), Abril de 2020 – Guía para los sistemas de agua de edificios www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html

Instituto de Ciencias, Políticas e Investigación del Medio Ambiente (ESPRI), Abril de 2020 – La calidad del agua de los edificios y el coronavirus: Guía de descarga de agua para períodos de poco o nada de uso esprininstitute.org/coronavirus-building-flushing-guidance

Fundación para la Investigación del Agua (WRF), Mayo de 2019 – Guía de descarga de agua para la plomería de los locales y las redes de servicio para evitar o abordar un aviso de agua potable www.waterrf.org/system/files/resource/2019-05/4572.pdf

¿Aún tiene preguntas?

Si todavía tiene preguntas sobre la guía de descarga de agua de los edificios, póngase en contacto con la División de Calidad del Agua de SFPUC al **(650) 652-3100**, de lunes a viernes, de 8 a. m. a 5 p. m., o por correo electrónico a quality@sfgwater.org.



Flushing Guidance for Building Water Systems Following Extended Shutdown

San Francisco Public Utilities Commission Water Quality Division

During normal building operations, water usage by building occupants keeps water within building pipes fresh. When buildings are vacant for extended periods, stagnant water can deteriorate and develop water quality issues. These issues can be aesthetic, creating taste and odor problems or water clarity problems, or they can be health-related due to bacterial growth from the loss of a disinfectant residual in the water or from leaching of metals (e.g., lead) from the plumbing. This guidance provides tips for safely returning building water systems to service after San Francisco's shelter-in-place period.

Flushing brings in disinfectant from the municipal system that can help control biological growth. The longer service is interrupted, a commensurately greater level of effort is needed for water quality restoration. Flushing guidance is divided into two sections: (1) guidance for all buildings and (2) additional guidance for large buildings. Large buildings are defined as buildings of 40 or more feet in height (i.e., 4 or more stories). This guidance is based on recent information from American Water Works Association (AWWA), Environmental Science, Policy & Research Institute (ESPRI), and Centers for Disease Control and Prevention (CDC). Due to rapidly changing information during COVID-19, all guidance will be updated as appropriate.

Guidance for All Buildings

SFPUC has identified the following flushing guidance for all buildings that have experienced significant shutdown periods. If you are not familiar with your building's plumbing, consider hiring a plumber to assist you with flushing.

1. Inspect and map out your facility's water system, including location where water enters the facility and all water-related devices and connections (e.g. drinking fountains, toilets, showers, irrigation systems, water heaters, water treatment devices, kitchen and bath faucets, hose bibs, eye washes, etc.).
2. Remove, isolate or bypass devices like treatment units, cooling systems, irrigation systems, etc.
3. Take steps to prevent backflow or the siphoning of contaminants into plumbing (e.g., close valves separating irrigation systems from building plumbing, disconnect hoses attached to faucets, etc.).
4. Make sure that all drains are open to prevent flooding.
5. Organize flushing to maximize the flow of water. Open several outlets simultaneously to flush the service line and then flush outlets individually starting near where the water enters the facility.
6. Run water through all outlets (e.g., hose bibs, faucets, showerheads, flushometers, etc.), while removing aerators when possible. Typical durations in existing protocols range from 10 to 30 minutes for each outlet.
7. Flush the cold water lines first and then the hot water lines. Also make sure to drain and flush all systems or appliances that store water (e.g., hot water tanks). For small buildings, the hot water tank can be drained directly; otherwise, it can require up to 45 minutes to fully flush a typical 40-gallon hot water tank. You can detect if flushing was adequate when the hot water tap runs cold.
8. Flush until air is purged from lines and discolored/cloudy water dissipate (typically entrained air will give water a whitish, milky appearance).
9. Replace all point-of-use filters, including the filters in refrigerators.
10. Ensure hot water storage tanks are set at temperatures that prevent the growth of *Legionella* bacteria (at least 120°F and ideally >140°F). Also, when applicable, follow all other *Legionella* prevention guidance that have been identified by CDC, such as decorative fountain cleaning, hot tub maintenance, and cooling tower maintenance (see CDC link, below).
11. Maintain records of flushing details, such as dates/times of flushing, approximate volume of water flushed, the sequence of flushing steps, and a list of appliances, tanks, and treatment systems that were cleaned/flushed. If another round of flushing is needed at a future date, records could help optimize the flushing process for your building.

Additional Guidance for Large Buildings

SFPUC recommends the following additional guidance for large buildings (≥ 40 feet in height or ≥ 4 stories). These guidance were adapted from ESPRI.

- Large building managers should plan ahead to ensure flushing is completed prior to re-opening the building for occupancy. Flushing times and the need for follow-up flushing will depend on building size and building age. To complete flushing, it could take a couple of days to a week.
- Typically, a single flush cannot bring a large building water system back to normal operation and re-establish good water quality. Flushing requires an initial flush to remove low quality water and contaminants and then follow-up flushes that may bring the building back to normal occupancy water quality.
- Flushing should be conducted in phases (e.g., one floor at a time) to avoid problems with drainage capacity and to ensure efficient flushing as follows:
 - For each floor, flushing should proceed from the water service entrance to the periphery of the plumbing system.
 - Flush zone-by-zone, flushing zones progressively outward from the supply. The first zone to flush is the zone nearest the supply.
 - In each zone, flush the cold water plumbing first and then the hot water plumbing second.
- Some buildings have water treatment systems, such as filters at the building water supply. Those treatment systems need to be cleaned, flushed, and maintained as part of bringing the building back into use.
- Large buildings have a variety of places where water is stored. At a minimum, they should all be identified, drained, and flushed with clean cold water, after the building cold water service is properly restored. These include, but are not limited to:
 - Drinking water (cold water) storage
 - Hot water storage
 - Hot water recirculating loop(s)
 - Humidifiers
 - Cooling towers
- A best practice for a flushing program would be to take measurements of temperature and/or chlorine at cold water taps. The temperature of water entering the building (e.g., from a backflow preventer) can be compared to the water temperature from building taps. Similar temperatures, from the main to the taps, would indicate that fresh water has reached the taps. Similarly, disinfectant (chlorine) measurements and comparison can be conducted at cold water taps to verify that fresh drinking water has replaced stagnant water in the building plumbing.

How does building closure impact water quality?

Cold water pipes have a disinfectant residual which prevents bacterial growth. During extended building shutdowns, the cold water within building pipes will lose its disinfectant residual due to natural degradation processes. Without a disinfectant residual, there is an opportunity for bacterial growth. In addition, long contact times between stagnant water and pipes can cause undesirable leaching of pipe materials, such as lead solder in older plumbing and fixtures.

Hot water systems are typically maintained at elevated temperatures (a minimum of 120 °F and ideally greater than 140 °F), which minimizes warm-water bacteria, such as *Legionella* that thrive between 77 °F to 108 °F (CDC, ANSI/ASHRAE).

If hot water systems are not maintained at optimum temperatures, there is a potential for growth of *Legionella* bacteria, which is an inhalation concern wherever water is aerosolized (e.g., air conditioning systems, fountains, showers, etc.).

Water reuse?

In most cases, the water that is flushed will enter the sewer system. However, building managers should consider opportunities to use some of the stagnant water for a beneficial purpose, such as landscape irrigation or cleaning sidewalks.

References

American Water Works Association (AWWA), April 2020 – Notice on returning homes to service

www.awwa.org/Resources-Tools/Resource-Topics/Coronavirus#10681543-shutoffs-and-return-to-service-guidance

ANSI/ASHRAE, 2019 – Standard 188-2018, Legionellosis: Risk Management for Building Water Systems

www.ashrae.org/technical-resources/bookstore/ansi-ashrae-standard-188-2018-legionellosis-risk-management-for-building-water-systems

Centers for Disease Control and Prevention (CDC), May 2020 – Guidance for Building Water Systems

<https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html>

Environmental Science, Policy & Research Institute (ESPRI), April 2020 – Building Water Quality and Coronavirus: Flushing

Guidance for Periods of Low or No Use esprinstitute.org/coronavirus-building-flushing-guidance

Water Research Foundation (WRF), May 2019 – Flushing Guidance for Premise Plumbing and Service Lines to Avoid or Address a Drinking Water Advisory www.waterrf.org/system/files/resource/2019-05/4572.pdf

Still have questions?

If you still have questions on building flushing guidance, please contact SFPUC Water Quality Division at **(650) 652-3100**, Monday to Friday, 8 am to 5 pm, or by email at quality@sfwater.org.