June 15, 2023

## Garratt Callahan

Garratt Callahan (GC) conducted pre-remediation sampling of the domestic water system on 4/17/2023 during which they collected 25 representative samples (19 water, 6 swabs) and found 18 were positive (72%) for Legionella. GC recommended hyperchlorination and installation of in-line filters on every faucet. Hyperchlorination occurred on 4/20/2023 (i.e., injection of chlorine dioxide to both the cold and hot water systems), and in-line filters were installed on 4/21/2023. GC conducted post-remediation sampling on 5/2/2023 to evaluate the remediation efforts. In-line filters were removed during sampling to evaluate the efficacy of hyperchlorination. GC took 20 samples based on previous positive results and found 6 to be positive (30%) for Legionella. This significant reduction in Legionella indicates the remediation efforts, including hyperchlorination, were effective. GC recommends a flushing program as well as Water Management Plan to control the growth of Legionella in the building's water system. While a Water Management Plan, which includes a flushing program, is developed, the in-line filters which have been installed at every fixture will reduce employee exposure by capturing Legionella bacteria before it gets to the fixture.

## Forensic Analytical Consulting Services

Forensic Analytical Consulting Services (FACS) conducted pre-remediation sampling on 4/17/2023 and 4/18/2023. FACS collected 41 samples focusing on areas previously reported as positive and found 18 samples were positive (44%) for Legionella. FACS provided verbal recommendations to DIR to apply filtration, replace and/or clean fixtures with positive results. These recommendations were relayed to DGS and implemented. FACS conducted post-remediation testing on 5/3/2023 to evaluate the efficacy of remediation efforts. FACS conducted sampling with the in-line filters installed based on FACS' pre- remediation sampling which indicated localized contamination of fixtures. By sampling with in-line filters in place, results can confirm if there is localized contamination. FACS collected 44 samples focusing on areas previously reported as positive and 5 were positive (11%) for Legionella. While this is a significant reduction in Legionella levels, localized contamination was confirmed in a small number of fixtures. FACS verbally recommended these fixtures be replaced or cleaned. DGS replaced the fixtures that tested positive on 5/23/2023.

## Conclusion from post-remediation sampling

Hyperchlorination along with flushing of the building water system and installation of in-line filters was effective in significantly reducing, though not eliminating, the Legionella levels in the water system. Localized contamination of Legionella was present in a few fixtures and cleaning and/or replacement of identified fixtures was conducted to remediate the localized Legionella in those fixtures. In-line filters should remain on fixtures until a comprehensive Water Management plan (utilizing CDC, AIHA and ASHRAE guidelines) is in place and on-going routine water testing confirms Legionella is well-controlled (<1 CFU/mL) based on CDC established guidelines.