



DEPARTMENT OF
UTILITIES

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MEMORANDUM

Date: January 28, 2025
To: Chairperson Brad Firkus and Members of the Finance Committee
CC: Assistant City Attorney Darrin Glad
Kelli Rindt, Enterprise Accounting Fund Manager
From: Chris Stempa, Director of Utilities *CFS*
Subject: **Finance Committee Emergency Authorization: Appleton Water Treatment Plant Bulk Hypochlorite Tank Replacement**

BACKGROUND:

Sodium hypochlorite is used at the Appleton Water Treatment Facility (AWTF) as regulatory approved disinfection process chemical. Sodium hypochlorite is housed in three (3) 11,000-gallon fiberglass-reinforced plastic (FRP) bulk storage tanks that were originally commissioned in 2001. Tank manufacturers typically expect up to 15 years of life when storing 12.5% sodium hypochlorite in an FRP tank before relining is necessary to restore the interior protective coating layers.

In early January, staff discovered a sizeable leak in one of the three sodium hypochlorite (also known as bleach) bulk storage tanks. Sodium hypochlorite is the primary disinfection chemical used in drinking water treatment and is mandated for use by the EPA and WDNR. The inside of all three bulk storage tanks were relined in 2022 and 2023. That marked the second time they were relined since original installation. Relining fiberglass tanks is an accepted industry practice to extend their useful life (typically up to 25 years, depending on the chemical). Unfortunately, pin leaks had been observed in all three tanks since the last relining event but located in areas where relining can be challenging because of limited space (e.g. tank penetration gussets). Those leaks were immediately and successfully repaired within the contract warranty period. However, one of the bulk tanks had more extensive repairs completed on it prior to failing again in early January 2025 and on January 28th a leak was observed on a second bulk tank which has elevated the need for action.

Relining the inside does not effectively add structural strength but is intended to only reestablish the interior corrosion barrier. The leaks that have been experienced since the last relining event directly coincides to the tanks being loaded or filled as part of routine chemical deliveries. It is suspected that the tanks flex when subjected to lateral force during fill/drain cycles which forms microcracks in the protective barrier that bleed through the underlying structural layer. The intent now is to replace the bulk storage tanks given the

structural integrity concerns in all the tanks. Management staff is presently taking steps contract with an area contractor to repair one of the offline tanks. This would only be considered a temporary repair to ensure that the treatment operations had two reliable tanks in service while replacement tanks are being fabricated.

RECOMMENDATION:

Disinfection processes can be maintained with two bulk storage tanks but would be extremely hampered if required to only operate on one tank. There would be no redundancy or backup storage capacity if another tank were to fail. Given the similar age of these tanks, it is in the city's best interest to authorize emergency procurement that would take steps to replace the bulk storage tanks.

If you have any questions, please contact Chris Stempa at 920-832-5945.

Encl: Emergency Resolution