

# Memorandum

## City of Lawrence

### Utilities Department

**TO:** David Corliss  
**FROM:** Jeanette Klamm  
**CC:** Dave Wagner  
Mike Lawless  
Philip Ciesielski  
**Date:** November 13, 2012  
**RE:** Oread water tank inspection results

On October 15 and 22, Utilities Department staff and contractors inspected the 1,000,000 gallon south and the 1,300,000 gallon north Oread ground storage water tanks. The south tank was built in 1931, while the north tank was built in 1954. The purpose of the inspection was to determine the condition of the coatings and structure and evaluate the tank for compliance with sanitation guidelines, safety and security regulations and guidelines in accordance with AWWA, OSHA, KDHE, US EPA, and US Department of Homeland Security and related state and federal agencies.

Pictures best illustrate the inspection findings as follows:

#### **North Tank**

The roof hatch on the north tank shows heavy corrosion.



Roof beams show significant deterioration of the metal and coating, as well as corrosion.



Coatings on the interior walls show severe blistering caused by moisture under the coating.



Severe corrosion and coating failure as seen on the below beam as it attaches to the roof and sidewall.



Corrosion has deteriorated coating causing metal loss of many of the roof beams.





### South Tank

Several roof beams have come loose and hang from the roof, as well as one missing completely. Daylight also shows through holes in the roof in many places.



Beam loose and hanging.

Beam missing.

Beam loose and laying on brace.

Beam loose and hanging.

Severe corrosion and missing rivets at sidewall/roof seam.

Two of the many holes in the roof.

72 beams support the roof, 24 on the interior ring and 48 on the exterior ring. All have varying degrees of corrosion.



24 Interior Ring Beams.

48 Exterior Ring Beams.

Corrosion of the rivets at the sidewall and roof seam has corroded into the metal.



Severe corrosion around the roof hatch and hanging roof beams.



Beam loose and hanging.

Severe corrosion of roof hatch.

Beam loose and laying on brace.

Blisters in the coating of the tank bottom, indicating moisture under the coating.



Corrosion caused by the missing roof beam that possibly fell and lay on the floor of the tank.





Corrosion near the sidewall/floor seam, potentially the cause of a leak in the tank.



#### Summary

The inspection report states the exterior coatings of both tanks have lead and chromium above EPA limits and are in poor condition. Adhesion is good and re-coating to prevent metal loss as opposed to full removal and re-coating is possible. The interior coatings are also in poor condition and require striping to bare metal and re-coating. Roof hatches on both tanks require replacement due to corrosion. The vent on the south tank does not comply with AWWA guidelines and needs replacement. The foundation of the north tank is in poor condition requiring repair. Multiple beams will need replacement, due to corrosion and condition. Hatches on both tanks will require replacement, as well as holes in the roof patched and significant areas of corrosion removed and replaced.

The contractor believes that rehabilitation is a feasible option for the tanks. Estimated costs to rehabilitation for the tanks were not available at the time of the report presentation and will be provided upon completion. Staff will evaluate the cost of rehabilitation versus replacement and may consider bidding both options.