

7. Conclusions and Recommendations

7.1 Conclusions

The City of Winnipeg water system was reviewed in light of recent boil water advisories. The system and operations and maintenance procedures were found to be robust. While no significant issues were found, a number of recommendations for improvement were identified.

It is impossible to prove retrospectively what caused the January 26, 2015 event. Based on available data and a systematic analysis of all conceivable possibilities, it is very unlikely that the event of January 26, 2015 was indicative of a contamination of the public water supply. It is most likely that the cause of the positive samples was contamination introduced in the sampling or analytical process. A similar conclusion can be drawn from the data trends from the October 2013 event. The event of May 2014 involved only one sample, and thus the possibility of a localized contamination event cannot be definitively ruled out. The presence of a strong chlorine residual, low turbidity, and negative repeat samples, along with no indication of an increase in public health impact, however, favor a scenario where the positive sample was caused by sample collection or laboratory contamination.

7.2 Recommendations

Given the complexity of the water supply system, periodic reviews of the entire water system should be considered, such as valve pit inspections. Under provincial water regulations, a water system assessment must be conducted every five years. An annual review focussing on system water quality vulnerability is recommended. This review should be performed by City staff involving a cross section of appropriate employees most familiar with the processes as performed in the field, along with managers and supervisors.

Opportunities for improvement to the City's water system have been identified, and should be evaluated for prioritized implementation. **Appendix A** includes a listing of the detailed findings. A general summary of the major recommendations is as follows:

- Periodic evaluation of the water system SOPs and practices in the field should be conducted in order to reflect current standards and best practices. The City's operational procedures generally follow good industry practice.
- Periodic evaluation of operation and maintenance records that could be associated with a water system vulnerability.
- Remediation of minor contamination risks identified in the City's facilities, including reservoirs and valve chambers.
- A periodic review of vulnerabilities to the sampling points should be considered to ensure changes to plumbing are not affecting tested water quality. Such a review should be conducted as part of an annual assessment, and would likely require its own SOP.
- An evaluation of the City's quality management system should be conducted to improve sample collection, start to finish.
- Determining the business case for the creation of a microbiological laboratory within the City's facilities.
- Working with the third party analytical laboratory conducting water quality testing to identify and reduce the possibility of contamination at the laboratory.