



MEMO

TO: Mayor and Council

FROM: Peter Loukes, Director, Environmental Services Department
Brenda Librecz, Commissioner Community & Fire Services

CC: Andy Taylor, Chief Administrative Officer

DATE: May 28, 2015

SUBJECT: Water Main Breaks History and Trends

Mayor and Members of Council

Further to questions raised at the May 26th General Committee, staff have put together this memo to outline our water main break history.

Winter 2015 - Coldest on Record

February 2015 was the coldest month in Toronto history with an overall average temperature of -12.6 C. In fact for a stretch of 37 days, the daily high never broke the melting point – peaking at -1.4 C. The lowest of the lows in February dropped to -25.5 C, with a wind chill that neared -40 C. Twenty-three days were labeled extremely cold by Toronto's Public Health Department. That total well exceeded February 2014's 12 alerts, and the three in February 2013 and two in February 2012. February normally averages -4.5 C — more than eight degrees warmer than this year.

As a result of that prolonged cold, the City of Markham experienced 28 water main breaks in the first 4 months of the year. As shown in the chart below, Markham has been averaging about 15 breaks in that period over the previous 5 years.

Water Main Break History (2010 – 2015)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2010	8	6	1	2	0	1	2	4	2	3	1	1	31
2011	5	10	1	0	0	2	3	0	3	7	5	1	37
2012	4	4	4	1	1	1	1	4	2	6	1	3	32
2013	7	4	2	2	1	1	1	1	3	0	4	7	33
2014	6	4	3	2	1	3	1	0	3	2	2	3	30
2015	8	9	5	6	1								29

Since these breaks were related to the extreme cold weather, we are not expecting that this trend will continue through the rest of this year.

Markham has been Proactive in Reducing Water Main Breaks

Attachment A shows the annual number of water main breaks in Markham from 1988 to 2015. Since the late 1980's, Markham has decreased the annual number of breaks by 80%. Starting in 1992, Markham began to add cathodic protection to the iron water mains; and with improved material specifications and installation methods; we have dramatically lower number of breaks.

Benchmarking Markham's Water Main Break Performance Against Other Municipalities

Markham has been part of the National Benchmarking Initiative (NBI) since 2007. NBI has 40+ member municipalities from across Canada and compares and shares performance and best practices to help member municipalities improve their service delivery. Fourteen of those municipalities are located in Southern Ontario. (Regions of Durham, Peel, and Halton; Cities of Barrie, Kitchener, Waterloo, Cambridge, Hamilton, London, Windsor, Brantford and Guelph, and; Town of Richmond Hill)



Markham's Water Main Break Performance is Amongst the Lowest in Southern Ontario

Attachment B shows the water main break performance of 14 of NBI's members from the Southern Ontario area. In order to compare performance, the number of watermain breaks is normalized to a rate per 100 km of system water main. The graph shows the annual maximum, minimum, and median rates of the 14 members. Please note that the group values only go to 2012 as the 2013 numbers will not be ready for a few more months. We did however show Markham's performance for 2013, 2014, and projected 2015.

Based on this analysis, Markham has been consistently near the minimum of the group from 2008 to 2012. In fact Markham was lowest in 2009, 2010, and 2011. It can also be seen that for 2013 and 2014 Markham's performance remained consistently low. Although we are projecting an increase in 2015, it is not a significant increase and, since all these municipalities would have been dealing with the same weather pattern issues, we suspect Markham will continue to remain near the minimum level of the group.

Key Messages

- Cold weather in first quarter of the year contributed to a high than normal number of water main breaks
- Higher trend in breaks not expected to continue through the rest of the year
- Markham's proactive cathodic protection program has helped reduce breaks 80% over last 20 years.
- Markham's water main break performance is amongst the lowest in Southern Ontario since 2008


Peter Loukes, P. Eng.
Director, Environmental Services
Brenda Librecz
Commissioner, Community and Fire Services

ATTACHMENTS:

Attachment A – Water Main Break Counts Since 1988

Attachment B – #of Main Break/100km Length – Southern Ontario Utilities