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TO:	**CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JANUARY 10, 2017**
FROM:	**JOHN LUCAS, P.ENG. DIRECTOR - WATER AND WASTEWATER**
SUBJECT:	**LEAD MITIGATION PROGRAM UPDATE**

RECOMMENDATION

That, on the recommendation of the Director - Water and Wastewater, the following report **BE RECEIVED** for information regarding the City of London's lead mitigation program for Londoners with lead water service pipes.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

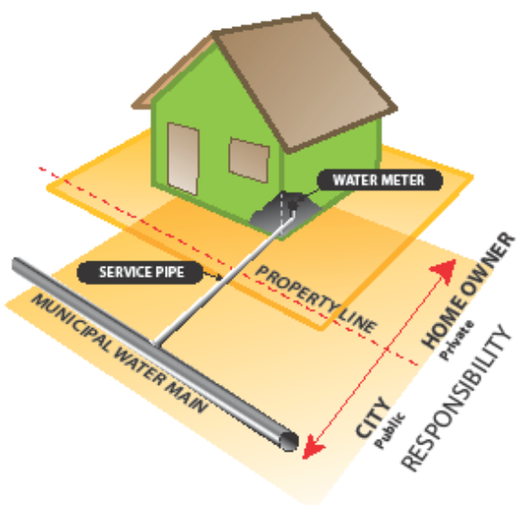
- Lead Mitigation Program and Community Lead Testing, June 1, 2009, ETC
- Lead Mitigation Program Update, March 5, 2012, CWC

BACKGROUND

Purpose

The purpose of this report is to update the Civic Works Committee and Council with respect to the City's ongoing efforts to mitigate lead levels in the drinking water of consumers with lead water service pipes.

Background



The water in London's distribution system has an extremely low level of lead, but the lead content in water can increase if the water travels through a lead water service pipe. The water service is the pipe that conveys water from the water main under the street to the

water meter in the house. Water services run across both public and private property. The portion of the service that runs on City property (from the water main to the property line) is owned by the City, and the portion running from the property line to the water meter belongs to the homeowner. Prior to 1953 lead was commonly used in London as a service pipe material. If a London home was built before 1953, the water service could be either copper or lead.

In the summer of 2006, the City of London implemented a three-pronged strategy to reduce lead levels at consumers' taps, consisting of *Education and Awareness*, *Water Chemistry Changes*, and *Lead Service Replacements*. At that time, it was estimated that approximately 9,000 London homes had lead water services.

DISCUSSION

Education and Awareness

In 2006, the City of London embarked upon a continuing campaign of education and awareness regarding lead in drinking water. Information is posted on the City website, and several "Enviroworks" flyers have been dedicated to the topic of lead exposure and lead water services. In each of these communications, customers are informed of the City's free lead testing program and are encouraged to call and arrange a home visit for a water sample to be taken. The laboratory results of all samples taken are mailed to homeowners with an explanatory letter. If the lead level in the water sample is elevated, an information package is provided to the homeowner. These packages were prepared by the Middlesex-London Health Unit and contain important information regarding potential health effects related to lead exposure, and steps that can be taken to reduce exposure to all sources of lead.

City staff replace about 10,000 older water meters in London homes and businesses each year. If the building is 1950's era or older, water meter staff explain that a lead water service may be present, and offer to take a water sample while they are on-site. If a lead water service is visible when the water meter is replaced, the homeowner is made aware at that time.

Since the City of London began offering free lead testing in 2006, almost 12,000 water samples have been taken for analysis from London households and businesses.

Water Chemistry Changes

In 2007, the pH of London's drinking water was approximately 7.1. The pH of the raw water in Lakes Huron and Erie is approximately 8.2, but that pH is reduced by the water treatment processes in order to achieve optimal treatment. Established research, and experimentation in London in 2007 indicated that raising the pH of the water following treatment would significantly reduce lead uptake. In late 2007, pH adjustment equipment was installed at the water treatment plant near Grand Bend, which is part of the Lake Huron Primary Water Supply System. Gradual pH adjustment commenced in January, 2008, and continues to this day with a target pH value of 7.9. The vast majority of older London homes are supplied with water from the Lake Huron system.

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Similar pH adjustment was implemented in 2012 at the water treatment plant near Port Stanley, which is part of the Elgin Area Primary Water Supply System.

Lead Service Replacements

Londoners with lead water services have several options to reduce their exposure to lead in drinking water. For example, different varieties of NSF-certified water filters can remove lead from drinking water, including pour-through pitchers, faucet-mount filters, and refrigerator filters. Still, the most effective and fool-proof method is replacement of the lead service.

Lead water services are replaced in London under 3 different programs:

1. **The Lead Service Replacement Program** – Under this program, homeowners with lead services initiate the process by hiring a contractor to replace the private portion of the service. The City of London then replaces the public portion of the service at no additional charge to the homeowner. There are several London contractors who perform private-side lead replacements, at an average cost to the homeowner of about $1,500. In 2016, 86 Londoners replaced their lead services under this program.

2. **The Capital Water Main Replacement Program** – Under this program, the City of London replaces the public portions of all water services on a given street as part of a larger infrastructure renewal process that also replaces the water main. If lead services exist on a street where the water main is scheduled for replacement, homeowners are provided with literature that informs them of the upcoming project, offers free testing to determine whether a lead service is present at their home, and explains the benefits of replacing the private portion of the lead service in conjunction with the public portion replacement. The average cost for a homeowner to have the private portion of a lead service replaced by a contractor in conjunction with this program is approximately $1,100. In 2016, the public portions of 129 lead services were replaced under this program.

3. **The Targeted Lead Service Replacement Program** – Under this program, the City of London identifies and replaces the public portions of all lead services on targeted streets where the water main is not being replaced. As with capital water main replacements, homeowners receive literature explaining the benefits of replacing the private portion of the lead service in conjunction with the public portion replacement. The average cost for a homeowner to have the private portion of a lead service replaced by a contractor in conjunction with this program is also approximately $1,100. In 2015 and 2016, this program was paused to allow Water Operations crews to focus on remediating water services that froze during the extremely cold winters of 2013-14 and 2014-15. During those winters, 711 water services froze solid, leaving customers with no water. Approximately 300 of those services have now been replaced, lowered, or insulated. In 2017, the Targeted Lead Service Replacement Program will be re-instated, while previously frozen services will continue to be addressed.

Under the Lead Service Replacement Program, both the public and private portions of the lead service are replaced, resulting in a full service replacement. Under both the Capital Water Main Replacement Program and the Targeted Lead Service Replacement Program, the public portions of the services are replaced, but the homeowners may or may not choose to replace the private portions. Where a homeowner chooses to replace the private portion, a full replacement is the result. But in cases where the homeowner

chooses not to replace the private portion, the new public portion of the service is connected to the existing private lead service, resulting in a partial lead service replacement.

Full lead service replacements reduce lead at customer's taps to the same low level that exists in the water mains. Testing in London has indicated that partial lead service replacements reduce customer lead levels by an average of 35 to 40%.The benefits of a full replacement are explained to homeowners, which include eliminating the source of lead, better water flow, and potentially avoiding costly repairs associated with a leak developing on an older water service.

To assist homeowners with private-side lead service replacements the City established a low-interest loan program whereby the City will lend homeowners the full amount required to replace the private portion. The loan is then collected over a 10-year period along with the property tax payments. The average loan payment is less than $15 per month.

In total, the public portions of 4,666 lead services have been replaced since 2006, for an average of 424 replacements per year. It is estimated that approximately 4,350 full lead services remain in London.

In 2008, Council approved an 18-year program to expedite lead service replacements. At that time, it was projected that by replacing an average of 500 lead services each year, the public portion of all lead services could be replaced by 2025.

The number of lead services replaced annually in London has declined in recent years. This is partly due to the reduction in the total number of customers wishing to perform this work. The 2-year hiatus in the Targeted Lead Service Replacement Program was also a contributing factor.

London's lead mitigation strategy of Education and Awareness, Water Chemistry Changes, and Lead Service Replacements formed the basis of the official Corrosion Control Plan (CCP) that was required to be submitted to Ontario's Ministry of Environment and Climate Change (MOECC) in 2009. In 2016, the MOECC required the submission of updated information regarding the CCP objectives. The City of London provided an updated projection that the remaining public-side lead services could be replaced in the next 15 years, which will require the replacement of 300 lead services per year.

SUMMARY

The proactive approach taken by the City of London with respect to mitigating lead levels in drinking water has included public education and awareness, changes to the water treatment processes, and lead service replacement programs. Londoners continue to take advantage of London's free lead testing program, and elevation of the water's pH has had a significant impact in reducing lead levels for customers with lead service pipes.

Full lead service replacement is the most effective method to minimize exposure to lead in drinking water. The City of London has ongoing programs for the replacement of the public portions of lead water services, and encourages Londoners to replace the private portions of lead water services by providing them with the knowledge they need to make informed decisions. Financial assistance is also available to assist with private-portion lead service replacements, through a low-interest loan program.

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The City of London's lead mitigation strategy is an important element of our continuing commitment to provide safe, clean drinking water to all London residents.

PREPARED BY:	**RECOMMENDED BY:**
JOHN SIMON, P.ENG. **DIVISION MANAGER, WATER OPERATIONS**	**JOHN LUCAS, P.ENG.** **DIRECTOR - WATER AND WASTEWATER**
REVIEWED & CONCURRED BY:	
KELLY SCHERR, P.ENG., MBA, FEC **MANAGING DIRECTOR OF ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER**	

CC:

Art Zuidema - City Manager
Dr. Chris Mackie - Middlesex-London Health Unit
Fatih Sekercioglu - Middlesex-London Health Unit
Scott Mathers – Division Manager, Water Engineering
Dan Huggins - Water Quality Manager