

**Utilities & Environmental Protection Report to  
SPC on Utilities and Corporate Services  
2020 September 16**

**ISC: UNRESTRICTED  
UCS2020-0377**

**Calgary's Accelerated Lead Service Pipe Removal and Mitigation Plan**

---

**EXECUTIVE SUMMARY**

The purpose of this report is to provide Administration's response to Notice of Motion PFC2019-1569, Addressing Lead Pipes in Calgary and outline The City of Calgary's (The City's) plan to accelerate the removal of lead service lines in the drinking water distribution system. A service line is the pipe that connects a home to the street's water main on both public and private property. Although Calgary does not have any lead water mains and has one of the lowest numbers of public lead service connections in Canada, The City's goal is to reduce any exposure to lead in drinking water. This accelerated program aims to replace verified lead service lines on public and private property by the end of 2023 and supports Calgary in moving towards being the first major municipality in Canada to eliminate lead service lines.

Based on the latest science, Health Canada has lowered the Maximum Acceptable Concentration (MAC) for lead from 10 parts per billion (ppb) to 5 ppb in order to further reduce exposure to lead. As a result of this change, there is a need to expedite the removal of the remaining 550 public lead service lines, as well as 150 lead service lines on private property, which were installed by private builders at the time of house construction. The cost for the replacement of verified public and private lead water services is estimated to be up to \$14 M over the next three years, with up to \$2.5M of that value potentially recovered from homeowners for private replacements. The program will be primarily funded through utility rates, with some potential recovery from homeowners for the private replacement component. Replacing the public and private portion of a lead service line at the same time not only reduces potential lead exposure, but also allows for more economical pricing for a homeowner.

It is important to note that the high quality of Calgary's drinking water has not changed. The concern remains with older homes built primarily before 1950 that have lead water service lines connecting the home to the water main and/or from pipes and plumbing inside the home.

**ADMINISTRATION RECOMMENDATION:**

That the Standing Policy Committee on Utilities and Corporate Services recommend that Council direct Administration to:

- (1) Work with customers to replace verified lead service lines on public and private property, excluding all pipes and fixtures downstream of the water meter or basement foundation; and
- (2) Collect repayment for the private service replacement from property owners.

**PREVIOUS COUNCIL DIRECTION / POLICY**

On 2019 December 16, following a Notice of Motion (PFC2019-1569), Council directed Administration to prepare a report on accelerated removal of lead water pipes, from both public and private properties, returning to Council through the Standing Policy Community on Utilities and Corporate Services no later than Q1 2020, considering:

- Estimated costs and funding options,
- Opportunities for collaboration and cost sharing with private property owners and the Government of Alberta, and
- Timelines.

Utilities & Environmental Protection Report to  
SPC on Utilities and Corporate Services  
2020 September 16

ISC: UNRESTRICTED  
UCS2020-0377

## **Calgary's Accelerated Lead Service Pipe Removal and Mitigation Plan**

---

### **BACKGROUND**

Protecting public health by providing clean and safe drinking water is a very high priority for The City's Water Utility. The City takes the responsibility to protect public health seriously. Drinking water is tested by The City more than 100,000 times a year, and we continue to meet or perform better on all provincial and federal guidelines.

It is rare to find lead in Calgary's drinking water. Lead is not naturally occurring in the Bow and Elbow Rivers. There are also no lead pipes at Calgary's water treatment plants or in the network of water mains that deliver water to households. In Calgary, any issues of elevated levels of lead are related to older homes, built primarily before 1950 that have lead water service lines connecting the home to the water main under the street, and/or from pipes and plumbing inside the home. Water service lines are a shared responsibility between The City and the homeowner at the property line, as illustrated in Attachment 1.

The National Plumbing Code of Canada permitted the use of lead in piping in homes until 1975, and lead solder until 1986. In Calgary, lead service connections were only used for a short time period, primarily between 1939 and 1947, during World War II when copper was not readily available. Following the war, copper once again became the main material for service lines. The City's data shows that it is rare to find a home built after 1950 that has lead service lines on public or private property. Approximately 5,000 buildings in Calgary were constructed between 1939 – 1947, and approximately 15,000 were constructed prior to 1950. Restrictions on lead content in brass plumbing fittings and fixtures occurred in 2013.

Replacement of lead water service lines is a best practice in lead mitigation across Canada. Today, there are only 550 properties in Calgary with verified public lead service connections, out of a total number of 339,000 service connections.

Cities across Canada are accelerating their plans to remove lead service lines from older homes. The number of public lead service lines ranges from a low in Calgary (550), to Halifax (2500), to Edmonton (4450) and the highest in Montreal (60,000).

The City has been addressing risk related to lead service lines for decades through various Water Service Replacement programs, and since 2008 through the Tap Water Sampling program. The City contacts customers with a suspected lead service, based on age of property and available water service material records, to participate in a free program to sample and test their tap water. If a concentration of lead that exceeds guidelines is found, The City will provide free water filters and work jointly with the homeowner to replace the full lead service line. The City replaces the public portion of the water service upon receiving notice from the homeowner that the private portion of the water service has been replaced.

Replacement of only the public portion of the lead water service line is no longer considered best practice, as recent scientific evidence shows that the disturbance caused by partial replacement increases lead concentrations in the drinking water. The City has verified 150 lead water service lines on private property, as a result of partial (public portion only) service replacements completed in the past.

## **Calgary's Accelerated Lead Service Pipe Removal and Mitigation Plan**

---

### **INVESTIGATION: ALTERNATIVES AND ANALYSIS**

To address the public health risk posed by lead water services, and from pipes and plumbing inside the home, The City will implement an Updated Lead Mitigation Strategy in 2020. A central component of this Strategy is the accelerated removal of remaining lead service lines.

The City will replace 550 verified public lead services and 150 verified lead services on private property. Working with our customers, The City will endeavor to replace the verified public and private lead water services by the end of 2023. Many factors will contribute to success in meeting this timeline or pose challenges that could slow progress. These factors include cooperation from homeowners, legal agreements for access to private property, quality of data and information, sufficient resourcing within The City, potential Covid-19 impacts, management of an external contractor and effective customer communications.

The City recently completed a pilot study on full water service line replacement on both public and private property. From this pilot an average cost for a full water service replacement is estimated to be \$20,000. The average portion attributed to the homeowner is estimated to be \$3,500. The service replacement will occur up to the foundation of the home and will not include replacement of pipes and plumbing within the home.

The capital cost for the replacement of verified public and private lead water services is estimated to be up to \$14 M. The total recoveries from all homeowners would be up to \$2.5 M (given economies of scale), potentially reducing the City's cost to \$11.5M. The City has reviewed two options for recovering the cost of accelerated lead service line replacement. These options are:

1. the cost of full service line replacement included in The City's utility rates, or
2. the cost of public service line replacement included in The City's utility rates, with cost recovery from property owners for the private service line portion via the following instruments, at the choice of the homeowner:
  - a) immediate cost recovery at the time of replacement, or
  - b) implementation of payment plans collected through property taxes.

It is recommended The City seek repayment for the private service line replacement from property owners through their choice of the above recovery instruments. This recommendation aligns with the homeowner having responsibility for infrastructure on private property as per the Municipal Government Act, The City's previous approach on service line replacements, and the Water Utility's cost of service principles that balance fairness and equity to customers.

The presence of lead in potable water is a complicated issue that requires not just The City, but also customer and property owner participation to address. While removal of lead services is a central component, it is only one part of addressing lead in the tap water on private properties. There is a potential for lead content in internal plumbing systems of homes (pipes, solder, plumbing fittings, and fixtures).

To address the residual risk of lead in drinking water from internal plumbing in homes, The City will implement actions identified in the Strategy focused on customer education, filter distribution, increased sampling and data collection in alignment with Alberta Environment and

Utilities & Environmental Protection Report to  
SPC on Utilities and Corporate Services  
2020 September 16

ISC: UNRESTRICTED  
UCS2020-0377

## **Calgary's Accelerated Lead Service Pipe Removal and Mitigation Plan**

---

Parks Guidance Document for Managing Lead in Municipal Drinking Water Systems in Alberta, Phase 1. The Strategy will recommend a balance of actions to be taken by The City and homeowners to ensure the risks of lead in drinking water are mitigated.

### **Stakeholder Engagement, Research and Communication**

Since 2008, The City has routinely engaged with Alberta Health Services (AHS), Health Canada, Alberta Environment and Parks (AEP), and customers on tap water sampling and lead service replacement programs. Through these annual programs, The City and AHS have communicated and worked directly with customers in older homes to inform them and take action to reduce their risks with lead in drinking water.

In 2019, AEP initiated a provincial working group on lead where The City was a key participant and contributor on how municipalities in Alberta can address the risk of lead in drinking water. Exchanges on knowledge and information have also occurred with major Canadian cities, including Edmonton, as nearly all have lead water services and are utilizing a balance of activities specific to their risk exposure.

The City's public engagement strategy on lead has been focused on the annual Tap Water Sampling Program and direct letters to homeowners, as well as information sharing through 311, and The City's website. Going forward, Administration will be working on education campaigns, website improvements, and access to public infrastructure information to assist customers in assessing the risk within their own home and/or business.

### **Strategic Alignment**

This report and recommendations support the following Council priorities with respect to a Well Run, Healthy and Green City:

- Lead by example and manage regulatory risks to protect public health and the environment,
- Continue to transform the organization to be more citizen-focused in its approach and delivery of service, and
- Effectively manage The City's inventory of public assets, optimizing limited resources to balance growth and maintenance requirements.

The outcomes of this report also support The Government of Alberta's *Water for Life Strategy*, which identifies goals of safe and secure drinking water.

### **Social, Environmental, Economic (External)**

Safe and affordable drinking water is an essential component of community health, and also supports a thriving City. It is imperative that The City continues to maintain public trust with respect to water quality.

## **Calgary's Accelerated Lead Service Pipe Removal and Mitigation Plan**

---

### **Financial Capacity**

#### ***Current and Future Operating and Capital Budget:***

Additional resourcing will be required by the Water Utility to conduct accelerated removal of lead service lines. It is expected new resources will be required to manage the replacement contracts, work with individual homeowners to address their unique circumstances, and conduct the required water quality sampling.

There are no Provincial grants specific to lead replacement or mitigation. Administration will seek federal funding for private lead service replacement as a Signature Project through the Federation of Canadian Municipalities. Eligibility and timing of Provincial and Federal funding is uncertain. To support the recommendations in this report Administration will request \$8 M in capital budget for 2021-2022, as part of the mid-cycle budget adjustments process. The remainder of the \$6M is anticipated to be spent in 2023 and will be requested as part of the One Calgary budgeting process.

### **Risk Assessment**

In order for The City's Strategy to be effective, customer participation is essential, particularly with service replacements. To address the risk from lead water service lines, The City will need to work with the private property owners to perform the private service replacements and implement practices to reduce the risk of lead in drinking water.

The City does not maintain detailed records of the infrastructure on private property. However, through the expansion of the water sampling program, and due diligence efforts to verify and confirm private water service line age and material type, The City will be able to further refine the understanding of where risks to customers remain and inform future phases of The City's Strategy. If lead services are identified through these efforts, these services will be added to the replacement plan.

Additionally, customers may be unaware of other sources of lead within their homes, such as old plumbing and fixtures, and actions they can take to reduce the risks these sources pose. The City understands the importance of educating the customer and working collaboratively with homeowners to ensure the risks of lead in drinking water are mitigated.

#### **REASON(S) FOR RECOMMENDATION(S):**

To reduce the risk of lead in drinking water from lead water services, and from pipes and plumbing inside the home, The City will implement an Updated Lead Mitigation Strategy in 2020. A central component of this program is an accelerated replacement of lead water services.

It is recommended The City seek repayment for the private service replacement from property owners. This recommendation aligns with the homeowner having responsibility for infrastructure on private property as per the Municipal Government Act, The City's previous approach on service line replacements, and the Water Utility's cost of service principles to balance fairness and equity to customers.

### **ATTACHMENT(S)**

1. Attachment 1 – Shared Responsibility of Water Service Lines – UCS2020-0377