

Lead Reduction Plan Update Report

For the period of:

Jan. 1, 2013 – Dec. 31, 2013

For:

Guelph Drinking Water System
[Corporation of the City of Guelph]

Prepared by:



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Executive Summary

The City of Guelph's (the City's) Lead Reduction Plan (LRP) was developed in lieu of a Corrosion Control Plan (as outlined in Ontario Regulation 170/03 Schedule 15) and was submitted to the Ministry of the Environment (MOE) in April, 2011. The application for full regulatory relief from the lead sampling requirements of Schedule 15.1 and post-implementation monitoring program as part of the City's LRP was subsequently fully approved on March 21, 2012. The purpose of this report is to provide an updated summary on continuing LRP initiatives and new LRP initiatives for the period of January 1 to December 31, 2013. Please refer to the Lead Reduction Plan and previous update report for detailed information on various programs and efforts prior to January 2013.

The City has been working proactively to address the presence of lead service lines (LSL) in Guelph since 2007 through the identification and replacement of both the public and private portions of LSLs. Full LSL replacement has demonstrated to be effective in achieving regulatory compliance as well as significantly reduce lead concentrations as measured at the point of the water's consumption. Partial LSL replacement has demonstrated to reduce lead concentrations at the point of consumption but is less effective at reducing lead levels for regulatory compliance.

Since 2007 there have been 614 lead service lines replaced in the City. As a result, 88 percent of these homes are now considered to be 'lead-free' service lines (i.e., either a full replacement, a partial replacement connecting back to a non-lead material or a subsequent replacement of a privately-owned LSL by the homeowner). At the beginning of the program, the City conducted an extensive records review identifying approximately 3,750 known or suspected lead services. Through the Verification Sampling Program the number has been reduced to 330 suspected LSLs (as of December 31, 2013).

As of December 31, 2013 there are approximately 30 City-owned LSLs to be replaced during the 2014 construction season and there are a total of 170 known or suspected privately-owned LSLs remaining in the City. Owners are continually encouraged to complete full replacement using the City's Grant Programs to achieve regulatory compliance at all sites within Guelph.

This update report summarizes lead reduction through the identification and replacement of LSLs and subsequent post replacement monitoring. This report includes updated information on the following programs that support the overall Lead Reduction Plan:

- Water Service Verification Program
- Lead Service Line Replacement Program
- Lead Water Service Replacement Grant Programs
- Post-Replacement Sampling Program
- Post-Implementation Monitoring Program
- Water Filter Rebate Program
- Outreach efforts

Table of Contents

Executive Summary	i
Background of Lead Reduction in the City of Guelph	1
Water Service Verification Program	2
Lead Service Line Replacement Program	4
Lead Water Service Replacement Grant Programs	6
Post Replacement Sampling Program.....	7
Post-Replacement Sampling Protocol.....	7
Comparing Partial Vs. 'Lead Free' Replacement.....	7
Compliance with ODWQS Following LSL Replacement	9
Post-Implementation Monitoring	11
Water Filter Rebate Program.....	12
Outreach Efforts.....	12
Conclusion	13

List of Tables

Table 1: Number of services verified (visual inspection and water sample)	2
Table 2: LSL replacements in 2013 on City- and Private- side of water service.....	4
Table 3: Summary of LSL Replacements from 2007 to 2013	5
Table 4: Summary of LSL Replacement Grant Programs as of December 31, 2013	6
Table 5: Summary of 30 minute Stagnation Samples Above ODWQS for Lead	9
Table 6: Estimated Compliance with ODWQS Following LSL Replacement, Post Replacement Sampling Program (based on both 5 Minute Flushed Samples and 30 Minute Stagnation Samples)	10
Table 7: Summary of Lead Levels within the Distribution System.....	11
Table 8: Annual POE Sampling 2013.....	11

List of Figures

Figure 1: Typical Lead Service Line Verification and Replacement Process	3
Figure 2: Average Pre- and Post-Replacement Lead Concentrations from the Post-Replacement Sampling Program (Based on 30 Minute Stagnation Sample).....	8

Background of Lead Reduction in the City of Guelph

In April 2011, as a result of regulated lead sampling which indicated that more than ten percent of residential samples taken exceeded the Ontario Drinking Water Quality Standard (ODWQS) for lead of 10 µg/L (micrograms per litre or parts per billion) during two consecutive rounds of the legislated sampling, the City submitted a Lead Reduction Plan in lieu of a Corrosion Control Plan (as outlined in O.Reg 170/03 Schedule 15).

The MOE Guidance Document on Corrosion Control (December 2009) recognized lead source reduction through physical replacement of lead service lines (a non-treatment solution) as a viable alternative to chemical treatment. The City evaluated both chemical corrosion control and physical replacement alternatives. The preferred method was determined to be lead source reduction through LSL replacement based on an analysis of the Guelph Water System features (multi-source groundwater system, varying groundwater quality and chemistry, and 13 treatment facilities) and challenges with chemical corrosion control treatment (structural upgrades and additional chemical treatment system). It is important to note that lead is the only corrosion by-product of concern for the Guelph system.

The LRP was developed with support from CH2MHILL and also with extensive consultation with the Ministry of the Environment (MOE) and Wellington-Dufferin-Guelph Public Health (WDGPH). The LRP is a key component in the City's overall strategy to address the presence of LSLs which was effectively initiated in the City in 2007 and endorsed by Council in 2008. Since 2007 the City has initiated the following programs to actively identify, sample for and remove LSLs while educating the public about the risks of lead in drinking water:

- Dedicated staff (since 2007) to coordinate lead sampling programs, maintain dataset of results, oversee replacement of LSLs, and engage the public through outreach and education;
- Voluntary sampling in order to identify and replace LSLs (as part the 2007 Voluntary Lead Sampling Program);
- Lead Water Service Replacement Program (in place since 2007) to replace the public portion of the LSL;
- Lead Profiling Study (2008) to identify the source of lead and to measure lead levels before and after LSL replacement;
- Legislated Lead Sampling Program in accordance with Schedule 15.1 of O.Reg 170/03;
- Water Service Verification Program (in place since 2008). Reviewed records and identified homes with incomplete records on water service pipe material;
- Commitment of financial resources for the replacement of City-owned LSLs;
- Replacing LSLs as part of capital improvement projects;
- Post-Replacement Sampling Program to monitor lead levels before and after full and partial LSL replacements for up to 18 months (with homeowner's participation);
- LSL Replacement Grant Program (since 2010) to encourage and assist homeowners to replace the private portion of the LSL; and
- Water Filter Rebate Program (since 2011) to provide customers an interim solution to lead reduction until permanent LSL replacement can be undertaken.

The MOE formally approved the City of Guelph's LRP and application for full regulatory relief from the lead sampling requirements of Schedule 15.1 on March 21, 2012. The City has completed this Lead Reduction

Plan Update Report for the period of Jan 1, 2013 to December 31, 2013 to satisfy the requirements as per Schedule D of Guelph's Municipal Drinking Water Licence 017-101 which states:

"Section 1.3.3. The Owner shall prepare an annual report summarizing the results of each of the measures identified in section 8.1 (Implementation Schedule) of the Lead Reduction Plan..."

Water Service Verification Program

In an effort to locate lead services within the City of Guelph, the Water Service Verification Program was launched in 2008 and is in addition to any legislative sampling requirements. The program is targeted at verifying the material of construction for approximately 3,750 water services of unknown composition (pre-identified during records review). Lead sampling is also offered at no charge to all residents of homes built prior to the mid-1950s. Approximately 4,065 samples have been collected to date as part of this program.

Lead water services are verified through the collection of a 5-minute flush sample and identification of the pipe material visible at the meter. There were 238 verification sampling visits in 2013 (see Table 1).

Table 1: Number of services verified (visual inspection and water sample) through Water Service Verification Program

Date	Number of Services Verified
2008 to 2010	2,487
2011	914
2012	426
2013	238
Total	4065

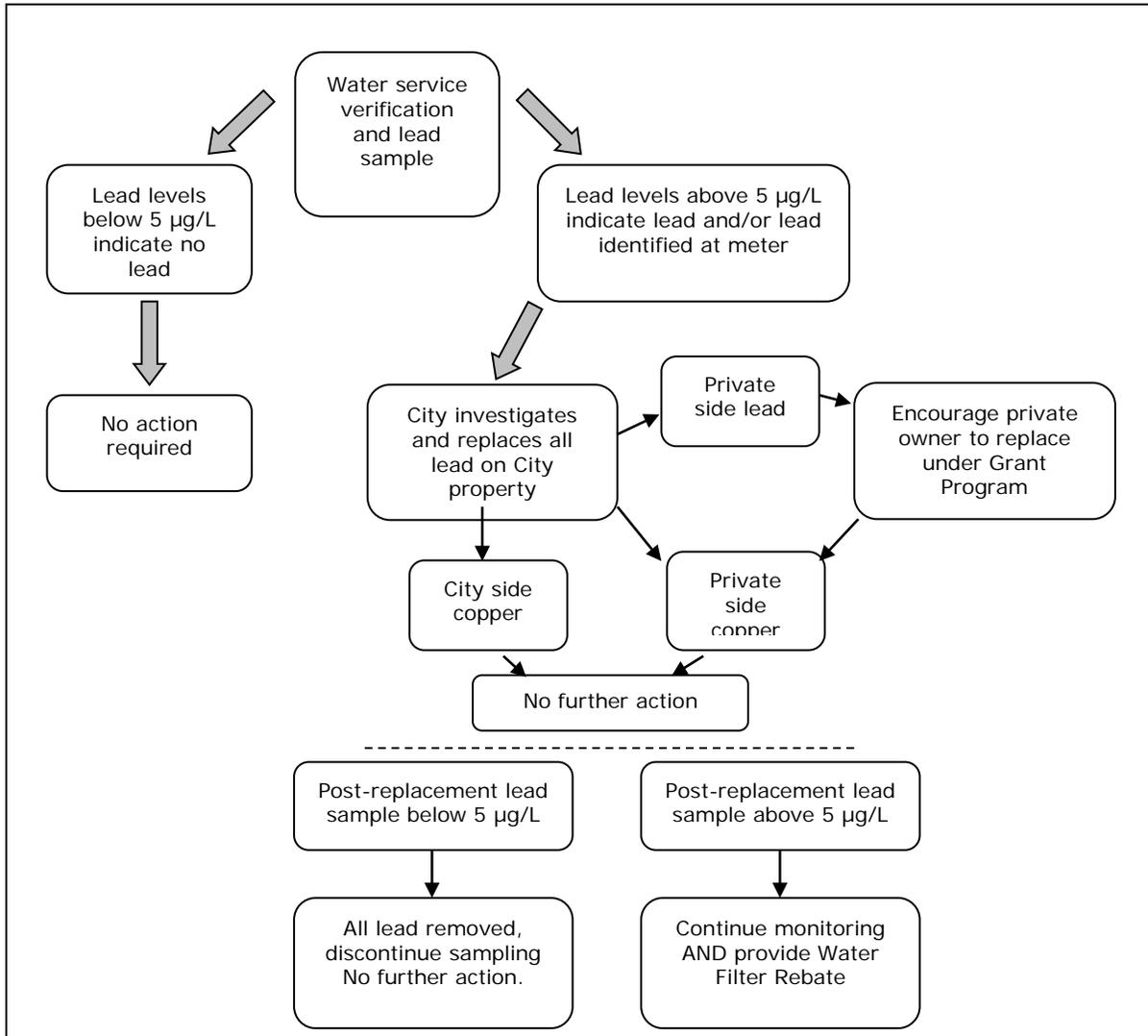
Using the Water Service Verification Program, previous Legislated Lead Sampling Program and additional information gathered from service material records, the City has been able to reduce the number of City owned 'unknown' or suspected lead services from 3,750 (as of Spring 2009) to approximately 330, as of December 31, 2013.

LSLs (either City-owned or privately-owned) were found or confirmed at approximately 13 percent of homes under the Water Service Verification Program in 2013. The introduction of combining water meter replacements with lead sampling accounts for the higher percentage of lead services found in 2013. Many of these homes were known to have lead services that had yet to be sampled due to homeowner resistance.

If the verification inspection and/or water sample analysis from the Water Service Verification Program indicate the water service contains lead (i.e. lead visually identified or lead concentrations are detected above half the maximum allowable concentration of 5 µg/L), the City replaces the City-owned portion of the water service at no cost to the property owner under the Lead Service Line Replacement Program. If

applicable, the City encourages the property owners to replace the private portion of the LSL through the LSL Replacement Grant Programs which can provide up to approximately \$1,500 towards the cost of replacement (Figure 1). Inflationary increases to the grant amounts are planned for 2014.

Figure 1: Typical Lead Service Line Verification and Replacement Process



Verification and removal of LSLs largely depends on owner participation and co-operation in gaining access to residences/businesses. Each remaining targeted property under this program has been contacted using multiple avenues including phone calls, mail, and door tags as well as through broad outreach methods such as newspaper advertisement, community events and radio.

Lead Service Line Replacement Program

A dedicated Water Service Replacement Program was established in 2007 to replace LSLs as they are found during sampling programs, leak repair, street reconstruction or records review. In 2013 a total of 31 LSL replacements took place. A breakdown of the total LSL replacements under the LSL Replacement Program and LSL Replacement Grant Programs in 2013 is provided in Table 2.

Table 2: LSL replacements in 2013 on City- and Private- side of water service

Type of Replacement		2013
Full LSL Replacement	Partner with property owner (not eligible for Grant Programa)	2
	Replaced during street reconstructionb	0
	Funded under Full LSL Replacement Grant Programa	2
Partial LSL Replacement	Lead Free - connected back to non-lead material or subsequently replaced under Grant Programa	7
	Lead - Connected back to lead on Private side	0
Private LSL Replacement	Replacement by private contractor	1
	Funded under Private LSL Replacement Grant Programa	19
TOTAL		31

Since 2007, 614 full or partial LSLs have been replaced through the Lead Water Service Replacement Program and/or the Grant Programs, a summary is provided in Table 3. Of all replacements undertaken in the City, 543 services or 88 percent are considered to be 'Lead Free', which include the following situations:

- i. a full replacement was carried out;
- ii. a partial replacement was carried out and the new partial service line was reconnected back to a non-lead material (copper or iron) and post-replacement sample results indicate no lead remains; or
- iii. a partial replacement was carried out by the City and was reconnected to an existing private lead service line which was subsequently replaced by the owner either by use of a private contractor or under the LSL Replacement Grant Program.

Since 2007, there were 135 partial replacements undertaken on the City-side that connected back to lead or an unknown material on the private-side. Of the 135 privately-owned LSLs, 71 have subsequently been replaced under the LSL Replacement Grant Program or by a privately hired contractor.

Table 3: Summary of LSL Replacements from 2007 to 2013

Year	Service is Lead-Free Following Replacement			Service Contains Lead or Unknown Following Replacement	Total	Priv Side Lead since replaced under the grant program
	Full (City and Private Sides Replaced)	Partial (City Side Replaced - connected to copper or iron)	Private Side Replacement (Grant or private contractor)	Partial (City side Replaced - connected to lead or unknown)		
2007	16	32	-	26	74	7
2008	21	40	-	29	90	19
2009	40	32	-	25	97	10
2010	46	27	47	35	155	25
2011	36	12	44	7	99	1
2012	21	14	23	10	68	6
2013	4	4	20	3	31	3
Total to Date	184	161	134	135	614	71
Adjusted Total	479			135-71 = 64	543	

Notes:

1. Since 2007, there were 71 instances where a partial city-side replacement that was connected back to lead or unknown was subsequently completed by the homeowner (Private-side Replacement) through the Private Grant Program or by a private Contractor. These 71 instances have been subtracted from the total, since they are already included within the total number of replacements resulting in lead-free services.
2. Prior to the Grant Program (2007-2009), private side lead replacements are included in the "Partial (City side replaced - connected back to Copper)" numbers because they were not formally tracked at the time but we have evidence that the service is now a fully copper line.
3. Since 2010, private side lead replacements are broken out and recorded as "Private Side Replacements (Grant or private contractor)"
4. Numbers recorded in this chart may vary slightly from those in the Lead Reduction Plan (April, 2011) due to subsequent data review.

As of December 31, 2013 there are approximately 30 City-owned LSLs to be replaced during the 2014 construction season and there are a total of 170 known or suspected privately-owned LSLs remaining in the City. Of the 170 remaining privately-owned LSLs, 64 were identified during the replacement of a City-owned LSL (since 2007) where the owner was unwilling or unable to replace the privately-owned LSL. The other 106 known or suspected privately-owned LSLs were identified through records review or the Water Service Verification Program.

Based on success achieved to date, Guelph has requested to be removed from the list of municipalities with a known lead issue and remove regulatory reporting requirements from the City of Guelph's Drinking Water License. This request is based on the understanding that programs to identify and physically replace

remaining LSLs will continue with dedicated resources to meet the City's long term goal of lead source reduction through full LSL replacement.

Lead Water Service Replacement Grant Programs

Regulatory compliance for lead reduction is focused on concentrations of lead at the point of consumption (tap); this is different from other ODWS standards which are only regulated within the distribution system. Therefore replacement of the private portion of LSLs presents a challenge to the success of an LSL replacement program due to the limits of the municipalities' jurisdiction and authority.

In 2010, the City initiated two financial incentive programs to encourage replacement of privately-owned LSL by reducing the financial burden. Inflationary increases to both the Private and Full Grant Programs are planned for 2014. In 2013, the Private Lead Water Service Replacement Grant Program provided up to \$1,507 to homeowners to replace a confirmed privately owned LSL where the City-owned water service line is confirmed to be copper (i.e., City-side LSL was previously replaced). The Full Lead Water Service Replacement Grant Program provided up to \$586 to homeowners to replace a confirmed privately owned LSL in tandem with City-owned LSL replacement. The value for the tandem replacement is substantially reduced to reflect the reduced excavation costs for the contractor when the City is present and performing the excavation.

Costs which are eligible for reimbursement under the Grant Programs include contractor costs, materials, building permit, and excavation costs (if applicable). The grant covers 70 to 100 percent of the LSL replacement cost for homeowners. In April 2012, changes were made to the Grant Programs to allow rental properties that are not owned by a commercial enterprise (including property management enterprises) to apply for a grant in accordance to the Municipal Act. This change has successfully increased uptake in the Grant Programs.

Targeted outreach regarding the Grant Programs is directed at all properties with known or suspected privately-owned LSLs. Since 2010 there have been 174 homeowners who have participated in the Grant Programs and successfully replaced their privately-owned LSL (Table 4).

Table 4: Summary of LSL Replacement Grant Programs as of December 31, 2013

Grant Program	2010	2011	2012	2013
Full Water Service Replacement Grant Program	15	21	7	2
Private Water Service Replacement Grant Program	45	42	23	19
Yearly Total	60	63	30	21
Total	174			

Post Replacement Sampling Program

The City developed a post-implementation monitoring program in consultation with the MOE and WDGPH (detailed in the LRP). The City's post-implementation monitoring program has been customized to reflect the features of the City's approach to lead source reduction while remaining consistent with the intent of Schedule 15.1. Lead concentrations in samples taken from on-site plumbing following LSL replacements are used to provide an assessment of the effectiveness of LSL replacement at individual sites (i.e., are lead concentrations reduced below the ODWQS following replacement?) and in the system, specifically within the portion of the City affected by lead services (i.e., are less than 10 percent of sites sampled post-replacement above the ODWQS?).

Post-Replacement Sampling Protocol

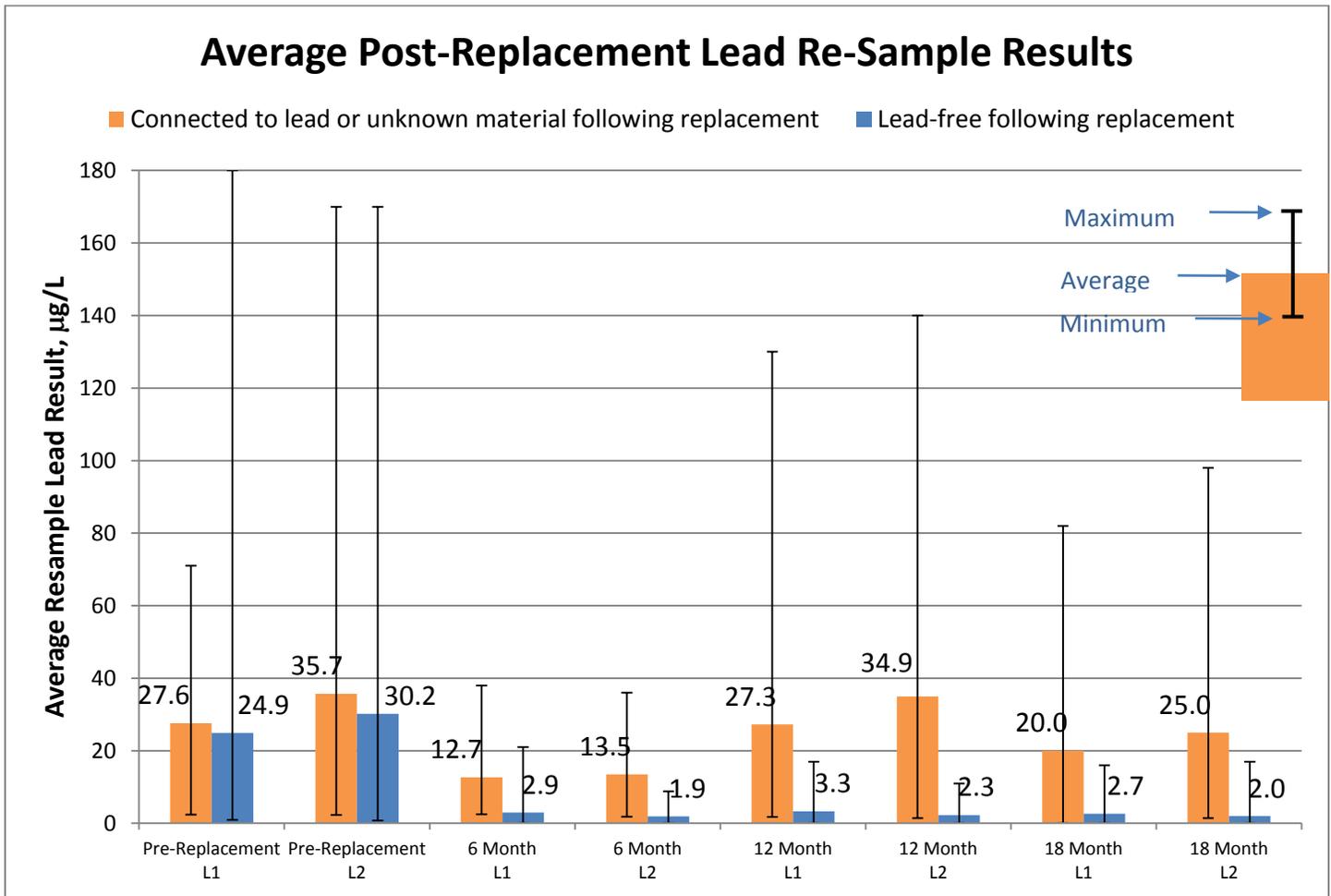
As part of this program the City attempts to obtain water samples prior to replacement and comparative samples following LSL replacement (with homeowner's participation). Since April 2011, lead sampling is conducted using a 30-minute stagnation sampling protocol which dictates that the water at point of consumption be flushed for a minimum of five minutes, followed by a 30 minute stagnation period, followed by the collection of a 1 litre sample (L1), and then collection of a second 1 litre sample (L2). Prior to April 2011 most samples were collected using the 5-minute flush protocol. Caution should be used when comparing pre- and post-replacement samples due to the difference in sample collection methods.

The City program uses sampling intervals of 6, 12 and 18 months following replacement to monitor lead concentrations at the point of consumption. Post-replacement lead sampling is discontinued after the 6 month anniversary at properties that have undergone a full LSL replacement or where a City LSL replacement has connected to a non-lead material on the private-side *and* where lead levels fall below half the ODWQS being 5 µg/L (current practice since April 2011). Sampling at homes where lead still remains on the private side is only discontinued once the 18 month interval has been achieved. Due to this sampling protocol, there can be a greater number of samples collected at sites where an LSL remains on private-side than a site where a full LSL Replacement occurred. Post replacement sampling provides an opportunity to encourage replacement of the privately-owned LSL and apply to the Private LSL Replacement Grant Program and the Filter Rebate Program (if applicable).

Comparing Partial Vs. 'Lead Free' Replacement

There are two types of services that can result from performing a LSL replacement; a partial replacement of the City-owned portion of the service that is reconnected to a privately-owned lead or 'unknown' material, and a full LSL that is considered 'lead free' following replacement (full LSL replacement or a partial LSL replacement that was reconnected back to a non-lead material and post replacement samples confirm all lead was removed). A comparison of average sample results from sites with these two types of service replacements are provided in Figure 2 (sample size of 387 sites).

Figure 2: Average Pre- and Post-Replacement Lead Concentrations from the Post-Replacement Sampling Program (Based on 30 Minute Stagnation Sample)



Notes:

- a) Sample size for the “Connected to lead or unknown material following replacement” is 65 replacements. Sample size for the “Lead-free following replacement” is 322 replacements.
- b) Only data using 30 minute stagnation sample is provided due to limitations in comparing results using differing sampling methods (5 minute flush versus 30 minute stagnation samples).
- c) Stagnation sample protocol is based on Schedule 15.1 which outlines the water is turned on for five minutes to flush the water, followed by a 30 minute stagnation period, followed by the collection of a 1 litre sample (L1), and then followed by a second 1 litre sample (L2).
- d) Twelve month re-samples are typically collected during the summer months as the majority of replacements are completed during the summer construction season. Lead levels during summer months are naturally higher due to increased water temperatures in the distribution system and home plumbing system. The dissolution of lead increases with increased water temperature.

Partial Lead Service Following Replacement

For sites with a private service line containing lead or an unknown material following replacement, a reduction in lead concentration is observed but regulatory compliance is not always achieved at individual sites following a partial LSL replacement.

'Lead Free' Service Following Replacement

Sites with 'lead-free' service lines following replacement show a decreasing trend in lead levels with time following replacement. Average concentrations below 3 µg/L are regularly achieved post-replacement. Regulatory compliance at an individual site is expected following full LSL replacement.

Compliance with ODWQS Following LSL Replacement

The success of reducing lead in drinking water by replacing lead service lines with copper is gauged from the Post-Replacement Sampling Program results. The LRP recommends that the City achieve the standard that less than 10 percent of sites sampled post-replacement are above the ODWQS. The number and percentage of LSL replacement sites with post-replacement lead concentrations above the ODWQS of 10 µg/L is provided in Table 5 and calculated using two sampling periods per year: period 1, from January 1 to June 30; and period 2, from July 1 to December 31 of the same year. This approach is modelled after Schedule 15.1 and only 30 minute stagnation samples are reported here (standard protocol since April 2011). It is important to note that not all sites are scheduled for post-replacement sampling within each time period.

Since 2011, and as of December 31, 2013, there have been 359 post replacement samples (i.e., immediately post replacement, 6 months, 12 months, and 18 months) collected at 304 sites in the City from homes that have undergone a LSL replacement (including full, partial or private LSL replacement). The City has achieved the standard that less than 10 percent of identified and replaced (either fully or partially) lead sites exceed the ODWQS for lead of 10 µg/L.

Table 5: Summary of 30 minute Stagnation Samples Above ODWQS for Lead

Post LSL Replacement Samples (incl. Full, Partial or Private Replacements)	2011		2012		2013	
	Jan 1 to Jun 30	Jul 1 to Dec 31	Jan 1 to Jun 30	Jul 1 to Dec 31	Jan 1 to Jun 30	Jul 1 to Dec 31
Number of sites above 10 µg/L Out of 304 sites in total	14	12	6	6	3	1
Percentage of sites above 10 µg/L	5.4%	4.6%	2.3%	2.3%	0.99%	0.33%

Legend: a – Calculated based on the total number of sites (i.e. 3/304 = 0.99%).

When reviewing the larger dataset of 614 homes that have undergone a LSL replacement in the City since 2007 (full, partial or private LSL replacements) some care should be taken comparing different sampling protocols. Of the 614 LSL replacement sites, there are 504 which have at least one post-replacement

sample collected using either a 5 minute flush or 30 minute stagnation. For comparison it is expected that a lead concentration of 5 µg/L based on a 5 minute flushed sample is an indicator of likely compliance or a lead concentration of 10 µg/L for a 30 minute stagnation sample. Estimated compliance based on these samples is presented in Table 6. It is important to note that not all replacements are yet due for a post-replacement sample. From these results, full replacement of the LSL is likely to result in compliance with the ODWQS (as was observed in 98 percent of sites). For sites with a private service line that contains lead or an unknown material following replacement, only 20 percent of the sites were in compliance.

Table 6: Estimated Compliance with ODWQS Following LSL Replacement, Post Replacement Sampling Program (based on both 5 Minute Flushed Samples and 30 Minute Stagnation Samples)

Description	Number of Sites with a 'Lead-Free' Service Line Following Replacement					Number of Sites with a Service Line That Contains Lead or Unknown Material Following Replacement				
	Immediately Post- Replacement	6 Month	12 Month	18 Month (or beyond)	Overall	Immediately Post- Replacement	6 Month	12 Month	18 Month (or beyond)	Overall
Number of Sites with at least one post-replacement sample	6	131	137	137	411	2	8	22	61	93
In Compliance: Lead < 5 µg/L based on a 5 min flushed sample or < 10 µg/L based on a 30 minute stagnation sample following replacement	4	130	136	132	402 (98 %)	0	3	4	12	19 (20 %)
Out of Compliance: Lead ≥ 5 µg/L based on a 5 minute flushed sample or ≥ 10 µg/L based on a 30 minute stagnation sample following replacement	2	1	1	5	9 (2 %)	2	5	18	49	74 (80 %)
<p>Notes: Only sites with at least one post-replacement sample are included in this table The most recent sample collected was used to determine compliance with or exceedance of the ODWQS. This varies by site depending on when the LSL was replaced and sampling is discontinued if sample results below 5 µg/L are obtained at sites considered to be lead-free. Samples collected using a 5 minute flush were considered to be in compliance if results were below 5 µg/L and samples collected using a 30 minute stagnation were considered to be in compliance if results were below 10 µg/L.</p>										

Post-Implementation Monitoring

The Lead Reduction Plan specifies recommended parameters for post-implementation monitoring to demonstrate conditions of the Guelph Water System remain stable over time. Ten lead samples are collected per year within the distribution system at five sampling stations (Table 7). All lead concentrations from distribution samples in 2013 were lower than the detection limit of 0.5 µg/L and indicate there is minimal lead originating from the distribution system beyond targeted lead service lines.

Table 7: Summary of Lead Levels within the Distribution System

Sample Date	Victory School Sampling Station	Waterloo Ave Sampling Station	College Ave Sampling Station	Kensington St Sampling Station	Robertson Outgoing POE
Mar 2013	< 0.5 (µg/L)	< 0.5 (µg/L)	< 0.5 (µg/L)	< 0.5 (µg/L)	< 0.5 (µg/L)
Oct 2013	< 0.5 (µg/L)	< 0.5 (µg/L)	< 0.5 (µg/L)	< 0.5 (µg/L)	< 0.5 (µg/L)

The City conducts operational annual sampling for lead, alkalinity, pH, and temperature at all points of entry (POEs) to the distribution system being treated sources or groups of sources. In addition, the City samples various water quality parameters as part of existing operational monitoring programs including iron, copper, TDS, turbidity, chloride, sulphate, bacteriological parameters and other metals. Table 8 provides an aggregated average for all POEs. Operational sampling of water quality parameters demonstrate there are no other corrosion by-products within the system and that the general chemistry of the water entering the Guelph distribution system remains stable.

Table 8: Annual POE Sampling 2013

Parameter	ODWQS MAC mg/L	ODWQS AO	ODWQS OG	Total Samples	# Above Criteria	Range (mg/L)		Average (mg/L)
						Min	Max	
Alkalinity (total, as CaCO ₃)	n/a	n/a	30-500	10	0	250	320	281.000
Background Bacteria (CFU/mL)	n/a	n/a	n/a	12	n/a	0	0	0
Chloride	n/a	250	n/a	10	0	41	250	130.3
Copper (total)	n/a	1	n/a	21	0	< 0.001	0.0063	0.0022
Iron (total)	n/a	0.3	n/a	21	0	< 0.1	0.23	0.200
Lead (total)	0.01	n/a	n/a	21	0	< 0.0005	0.0015	0.0013
pH	n/a	n/a	6.5-8.5	10	0	7.69	8.06	7.864
Saturation pH (@ 20 C)	n/a	n/a	n/a	10	n/a	6.88	7.08	6.974
Saturation pH (@ 4 C)	n/a	n/a	n/a	10	n/a	7.12	7.33	7.220
Sulphate	n/a	550	n/a	10	0	57	250	117.100
Total dissolved solids (TDS)	n/a	n/a	n/a	10	n/a	452	882	669.50
Legend: ODWQS – O. Reg. 169/03 Ontario Drinking Water Quality Standards MAC (Maximum Allowable Concentration) < means less than lower detection limit shown				n/a (not applicable) "AO", Aesthetic Objective "OG", Operational Guideline				

Annual Sampling at Residential Taps – 10 Sample Sites

Post replacement monitoring at up to 10 residential sites for up to 4 years has not been undertaken due to low customer participation. Post-replacement sampling at full replacement sites is discontinued once lead concentrations are reduced below 5 µg/L. Customers who chose not to replace a private side LSL at the same time as a City side replacement have little interest in lead concentrations and were not willing to participate. Investigative samples at some sites are often collected beyond the 18-month sampling period if lead concentrations remain elevated. The dataset is also enhanced when an owner or new owner applies for the Grant Program to undertake a private side LSL as a pre-replacement sample is collected.

Water Filter Rebate Program

The Water Filter Rebate Program is an interim risk management strategy to protect sensitive populations from lead exposure until full LSL replacement can be achieved. The City encourages homeowners to replace the private portion of the LSL. For customers who are resistant to replacement or who are not eligible for the LSL Replacement Grant Programs, the City encourages the use of a Point of Use water filter.

The program provides up to \$100 per year to customers, based on submitted receipts, for an approved NSF-053 filtration device. Despite efforts to encourage homeowners with a LSL to use a water filter device, uptake of the Water Filter Rebate Program has remained low. There were 3 approved applicants in 2013. Of those, 1 customer has since replaced their privately owned LSL.

Customers are informed about the program by City staff over the phone when elevated lead levels are discovered and application forms are mailed directly to owners and tenants along with sample results. Information about the program is advertised in the Guelph Tribune and within direct mail outs at various times of the year to households with known or suspected privately-owned LSLs.

Outreach Efforts

Success of the Lead Reduction Plan is dependent on homeowner participation. The City has undertaken extensive public education since 2007 and continues to work cooperatively with Wellington-Dufferin-Guelph Public Health to reach out to vulnerable populations. Public education and outreach is intended to encourage participation in the verification and replacement programs, educate the community and especially “at risk” groups about the health effects of lead in drinking water and target customers with privately-owned LSLs to participate in the LSL Replacement Grant Programs and Water Filter Rebate Program. Outreach efforts outlined below focus on those undertaken in 2013. For further information on past public education and outreach initiatives please refer to the LRP and previous update report.

General Advertising:

- Guelph Tribune;
- Guelph Community Guide;
- Col.lab.o.rate publication - Guelph Sustainable Solutions Group;
- Social media – Twitter and Facebook;
- Presence at local community events including Water Week, Multicultural Festival, Canada Day; and
- Updated 'Get the Lead Out' brochures and grant information sheet.

Targeted Outreach:

- At Risk Groups include doctors/midwife offices, daycare centres, Early Years Centres and Pre-Birth Questionnaire through Guelph-Wellington-Dufferin Public Health; and
- Student housing includes advertising within the University of Guelph's student newspaper.

Water Service Verification Program – target properties with 'unknown' water services

- Direct phone calls to owners and tenants;
- Notification of lead testing in conjunction with water meter maintenance work;
- Direct contact with new owners of homes sold within the past year – phone calls and letters
- Delivered 'door hangers';
- Letters to homeowners indicating that if a water sample is not obtained that the City will excavate the water service line to confirm the pipe material; and
- In conjunction with infrastructure street renewals, letters to homeowners requesting samples in order to verify before repaving begins.

Customers with Privately-Owned LSLs

- Strong encouragement of privately owned LSL replacement at the time of City owned LSL replacement (information is provided via letter and verbal contact by a Water Services Operator);
- Direct mail outs to customers regarding the risks of lead in drinking water, the LSL Replacement Grant Program, and Water Filter Rebate Program; and
- Direct phone calls to owners.

Conclusion

The City of Guelph continues to remain committed to lead source reduction through the physical replacement of lead service lines and has demonstrated that physical replacement is a viable and successful alternative to chemical treatment based on the unique characteristics of the Guelph water system. The City continues to strive for full LSL replacements and encourage owners to replace privately owned LSLs through the Grant Programs and communication of the health risks regarding lead in drinking water. Post-replacement monitoring at individual LSL replacement sites continues to prove that within the Guelph Drinking Water System, partial LSL replacement generally reduces lead concentrations from pre-replacement values and full LSL replacement consistently reduces lead concentrations below the ODWQS. The City of Guelph is constantly adapting communication to customers and delivery of our programs to maintain the success of our Lead Reduction Plan.

For more information or questions regarding this report please contact:

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