

STAFF SUMMARY

TO: Board of Directors
FROM: Frederick A. Laskey, Executive Director
DATE: January 16, 2019
SUBJECT: Lead Service Line Replacement Loan Program Update



COMMITTEE: Water Policy & Oversight

INFORMATION
 VOTE

Carolyn M. Fiore, Deputy Chief Operating Officer
Stephen Estes-Smargiassi, Director, Planning and Sustainability
Carl H. Leone, P. E., Senior Program Manager, Planning
Kristen M. Hall, Project Manager, Planning
Preparer/Title



David W. Coppes, P.E.
Chief Operating Officer

At a recent Board meeting, Mr. Carroll requested a comprehensive update on the Lead Service Line Replacement Loan Program.

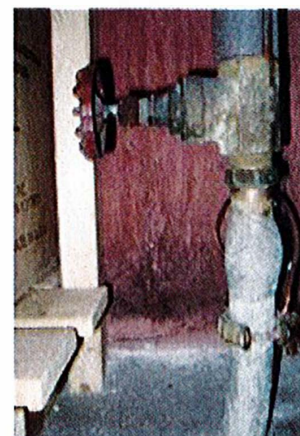
RECOMMENDATION:

For information only. During the first two and one-half years of the Lead Service Line Replacement Loan Program, MWRA has distributed \$10.1 million in loans to nine member communities. Based on construction completed to date (two full projects and portions of four other projects), MWRA's funding has resulted in removal of 1,200 lead water services on public and/or private property (a combination of public-side and private-side lead services, lead goosenecks, and lead fittings at water meters). The regional need for lead service line replacements is significant. Member communities estimate 38,200 lead service lines (full and partial lead services and lead goosenecks) remain in local water distribution systems, representing a \$190 million future need.

DISCUSSION:

MWRA's goal in providing financial assistance to member communities is to improve local water systems, thereby maintaining high water quality as it passes from MWRA's facilities through local pipelines to customers' taps. Replacement of lead service lines improves water quality by reducing the risk that lead can leach into the water consumed in customer's homes.

The presence of a lead service line connecting a home to the main in the street can result in elevated lead levels in tap water, especially if that water sits stagnant for an extended period. MWRA's stable water quality and effective corrosion control treatment reduces the risk that a lead service line will cause elevated lead levels. Measured lead levels in high risk homes have decreased by 80% to 90% since corrosion control was brought on-line in 1996; however, the risk of elevated levels remains as long as lead service lines are in use.



*Lead Water Service
Entering Basement*

In March 2016, the Board approved an enhancement to the Local Water System Assistance Program to make an additional \$100 million in 10-year interest-free loans available to communities solely for efforts to fully replace lead service lines. Under MWRA's Lead Service Line Replacement Loan Program each community can develop its own lead service replacement program, tailored to its local circumstances. The Lead Loan Program budget expenditure estimate is \$5.0 million per year for community distributions.

Similar to the other community financial assistance programs, MWRA's Board of Directors authorizes a total amount of funding available for each program. Those costs, as well as all other capital spending, are included in the annual Capital Improvement Program (CIP). Spending on the CIP is funded with bond proceeds and Current Revenue for Capital deposited into MWRA's Construction Fund. Based on the balance in the Construction Fund and projected spending, staff will seek authorization from the Board to issue bonds to replenish it. This methodology insures MWRA does not borrow funds until they are needed. The approval to issue bonds comes in the form of a Supplemental Resolution, which specifies the total amount to be issued and, once those bonds have been issued, any unutilized authorization expires. MWRA's CIP spending, including the community financial assistance programs, were reviewed by all three Rating Agencies and in general the view was that the projected spending was manageable given historic oversight and the five-year spending cap. To date, all Lead Loans have been funded through Current Revenue for Capital to avoid Private Activity Limitations on the use of tax-exempt bond proceeds.

Update on Community Need for the Lead Loan Program

Attachment A provides a list of the number of lead services and lead goosenecks in member community's local water system. The data was initially summarized from each community's response to a September 2016 DEP survey and has been updated with more current information as available from communities and as local construction projects progress. The current data indicates that about 16,000 lead service lines (some full lead services and some partial lead services) remain in local water distribution systems, representing approximately 3.2% of the total regional 500,000 water service connections. If lead goosenecks are also included, the current data indicates that about 38,200 services lines have a lead component remaining, representing approximately 7.6% of total regional water service lines. Individual community numbers have changed over time (some higher and some lower) as inventories have improved and as communities and property owners complete removals. If all remaining 38,200 services with a lead component are replaced at an average construction cost of \$5,000 per water service; the total cost will be \$190 million.

Update on Community Projects That Have Been Funded

During the first two and one-half years of the program (through December 2018), MWRA has distributed a total of \$10.1 million in Lead Service Line Replacement Loan Program funds to nine of the 45 eligible member water communities¹ as listed below:

- Quincy: \$1.5 million in FY17;

¹ MWRA has a total of 50 water communities (with Dedham/Westwood Water District counted as one). Under MWRA's Local Water System Assistance and Lead Loan Programs, 45 are eligible to apply for loan funds. The five ineligible water communities have special case considerations: Cambridge receives water on an emergency-only basis; Lynn receives water only for the GE plant; and Clinton, Leominster, and Worcester (also emergency only) receive untreated water from the Wachusett Reservoir.

- Winchester: \$500,000 in FY17 and \$500,000 second phase in FY18;
- Newton: \$4.0 million in FY17;
- Marlborough: \$1.0 million in FY18;
- Revere: \$195,000 in FY18;
- Winthrop: \$284,000 in FY18;
- Needham: \$1.0 million in FY18;
- Everett: \$1.0 million in FY19; and,
- Chelsea: \$100,000 in FY19.

Details on individual community projects are presented in Attachment B. Based on construction completed to date, MWRA's 10-year interest-free loans have resulted in removal of 1,200 lead water services on public and/or private property (a combination of public-side and private-side lead services, lead goosenecks, and lead fittings at water meters). The Quincy and Newton projects were substantially complete in December 2018. The remaining projects are at various stages of construction or will begin in spring 2019. Based on the total \$6.6 million in construction costs expended to date (six projects), the construction cost for replacement of lead services (or partial services) has averaged \$5,500 per service. For individual projects, costs have ranged from \$2,800 to \$7,900 per lead service (or partial service) replaced. A second cost metric is the average cost per foot of the 36,900 feet of new copper water services installed - \$160 per foot with individual projects ranging from \$130 to \$310 per foot. The cost of engineering planning, design, and construction services can add significantly to the overall cost of community projects. For instance, Newton's project included \$540,000 in engineering, 20% of the \$2.7 million construction cost. Some communities are covering the engineering costs with local funds outside the MWRA loan.



Replacement of Lead Water Services with Copper Service Pipe

Update on Future Community Applications for Funding

MWRA staff continue to discuss the Lead Service Line Replacement Program with local officials. Many communities continue to identify and replace public and private-side lead services as water main replacement projects are constructed. Staff anticipate additional applications under the Lead Service Line Replacement Loan Program from both participating communities moving into additional phases of their ongoing programs and communities that have not yet participated. Marlborough is planning to apply for an additional \$1.0 million lead loan from MWRA in February 2019 to fund its phase 2 project. Chelsea noted in its first lead loan application that it expects to apply for construction funding during the summer 2019 (phase 2 at \$300,000). Additional

communities expected to apply in the future include: Malden, Medford, Reading, and Somerville.

Continued MWRA outreach and community-to-community discussions on success and lessons learned from initial projects may help move more local officials to action on lead service line removals. MWRA's Lead Loan Program web page is updated regularly and staff plan to distribute this Staff Summary to all member water communities as an information tool.

If enacted, future EPA requirements for lead service line removal will increase the need for local funding options and will stimulate applications for MWRA interest-free loans. EPA is currently indicating a mid-2019 release of the Draft Revised Lead and Copper Rule. It is anticipated that the Revised Lead and Copper Rule will include a mandate for improved inventories of water service line construction materials. Community decision making to identify an appropriate community contribution to provide an incentive for private-side lead service line replacement is a key aspect of local implementation.

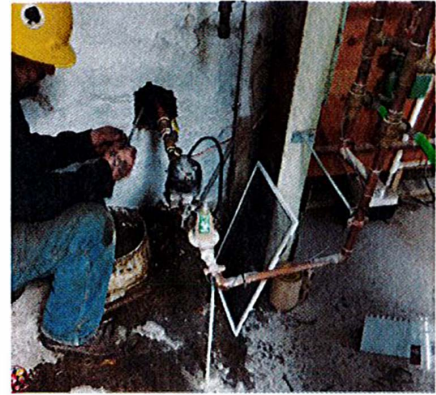
As noted on Attachment A, approximately 14 communities have reported no lead service lines and no lead goosenecks. Absent new inventory information, these communities will not be participating in the Lead Loan Program. An additional 12 communities have reported only lead goosenecks to be considered under a removal program.

Incentives for private-side lead service line replacement

Five methodologies to provide an incentive for private-side lead service line removals include:

- Seven of the nine communities that have received MWRA loan funding have committed to paying the full cost of private side lead service line removals, including: Chelsea, Everett, Marlborough, Needham, Quincy, Revere, and Winthrop. This methodology is expected to yield a high level of success. Quincy's project was recently completed with 206 lead service line replacements out of a total 285 identified - a 72% success rate. For the 79 known private-side lead services that remain, non-participation by investment property owners was the largest obstacle in getting a higher participation rate.
- The community paying a portion of the cost of private side lead service line removals may be the next most effective methodology. In the case of Winchester, the Town committed to paying the first \$1,200 of private-side lead service line removal and the property owner is billed for the remainder. Only 20 private-side lead services were identified and 19 were removed - a 95% success rate with one private-side property owner refusing to participate. Similarly, BWSC's lead service line removal program (no MWRA funding) pays the first \$2,000 of cost of private-side lead service line removals and property owner pays the remainder with the option of spreading the payment out over four years via their monthly water bill. For small house lots with a relatively short water service line, BWSC finds the \$2,000 often covers the full cost of the private-side lead service removal.

- Newton offered a 10-year interest-free loan to property owners to cover the cost of private-side lead service line removals. The project was coordinated by a City consultant and all construction was performed by a construction contractor working for the City. The construction-only cost for each private-side lead service line replacement was tabulated and is being billed to each property owner over a 10-year period. This methodology could be expected to yield a more modest level of success. However, Newton's project resulted in a 97% success rate with only 8 of 300 private-side lead services not being removed because property owners refused to participate. The high success rate may be due to the extensive outreach to property owners by the City and its consultant.



Private-side lead service replacement in Newton

- Medford is providing a \$1,000 rebate incentive for homeowners who contract privately for private-side lead service line removal work. During the first six months of the pilot program, 43 property owners removed their private-side lead services.

BUDGET/FISCAL IMPACT:

The FY19 CIP includes an overall net budget of zero dollars for the Local Water System Assistance Program (including the Lead Loan Program) because community loans are offset by repayments over the 10-year loan repayment period. The Lead Loan Program budget target is \$5.0 million per year for lead service line loan distributions. Due to the uncertainty on what methodology communities may choose to provide private-side lead incentives, lead loans have been funded using Current Revenue for Capital instead of tax-exempt bond proceeds to prevent private activity concerns. As community loans are repaid, the funds are deposited back into MWRA's Current Revenue for Capital subaccount of the Construction Fund.

MBE/WBE PARTICIPATION:

MBE/WBE goals for community projects funded by MWRA are established in the Program Guidelines.

ATTACHMENTS:

Attachment A - Summary Table for MWRA Community Lead Services

Attachment B - Details on Community Lead Service Line Replacement Projects

ATTACHMENT A
MWRA Community Lead Water Service List (updated 12/14/18)

Community	Number of Services	Estimated Lead Services	Estimated Lead Goosenecks	Notes
Boston	87,638	4,042	N/A	Has a BWSC-funded program
Malden	11,815	2,917	N/A	Likely to participate in the future
Medford	14,706	2,188	N/A	Likely to participate in the future
Somerville	14,423	1,874	N/A	Likely to participate in the future
Winthrop	4,480	1,282	N/A	\$284,000 MWRA Loan
Marlborough	10,303	1,174	N/A	\$1,000,000 MWRA Loan
Everett	8,126	900	N/A	\$1,000,000 MWRA Loan
Melrose	8,200	574	N/A	
Reading	7,992	300	1,580	Likely to participate in the future
Revere	12,000	267	N/A	\$195,000 MWRA Loan
Needham	10,192	114	848	\$1,000,000 MWRA Loan
Arlington	12,585	100	300	
Chelsea	5,100	96	N/A	\$100,000 MWRA Loan
Quincy	23,750	79	696	\$1,500,000 MWRA Loan
Norwood	8,649	36	N/A	
Brookline	10,527	25	N/A	
Stoneham	6,250	13	0	
Newton	25,071	8	0	\$4,000,000 MWRA Loan
Woburn	11,447	2	30	
Winchester	7,215	1	632	\$1,000,000 MWRA Loan
Belmont	7,745	1	15	
Wellesley	8,324	1	N/A	
Canton	7,162	N/A	N/A	
Dedham/Westwood	13,304	N/A	446	
Waltham	13,732	0	8,100	
Milton	8,473	0	4,200	
Stoughton	7,387	0	2,500	
Peabody	13,539	0	1,600	
Watertown	9,165	0	1,100	
Weston	3,613	0	100	
Lynnfield Water District	1,427	0	44	
Lexington	14,145	0	N/A	
Nahant	1,634	0	N/A	
Wilmington	7,469	0	N/A	
Wakefield	8,410	0	0	
Bedford	4,613	0	0	
Framingham	18,147	0	0	
Marblehead	8,065	0	0	
Northborough	4,234	0	0	
Saugus	9,331	0	0	
Southborough	3,210	0	0	
Swampscott	5,485	0	0	
Chicopee	16,527	0	0	
South Hadley F. D. #1	4,827	0	0	
Wilbraham	3,347	0	0	
TOTAL	503,784	15,994	22,191	

N/A - Information unavailable or unknown

ATTACHMENT B

Details on Community Lead Service Line Replacement Projects

Quincy received a \$1.5 million loan in December 2016 to fund the construction portion of its program targeting the removal of 141 public/private lead services, with Quincy paying the full cost to replace both the public and private lead service lines. The City, working with an engineering consultant, performed an extensive review of its Public Works records to develop a spreadsheet of addresses where lead services existed, were likely, or where the water service pipe material was unknown. A field crew inspected each suspect water service at the meter. Quincy initiated a public information campaign to inform property owners of the program, including: community meetings, website information, public information displays, letters targeted to suspect homes, translated information letters, and certified mail letters with participation agreements. Additional investigations during the project identified a total of 285 lead services, of which 163 were lead-lined steel services (see photo). The service line replacement construction began in April 2017 and was completed in September 2018. A total of 206 full or partial lead services were replaced with new copper services (104 lead services and 102 lead-lined services). The 206 replacements represent a 72% success rate of the total 285 identified lead services. For the 79 known private-side lead services that remain (18 lead services and 61 lead-lined steel services); non-participation by investment property owners was the largest obstacle to a higher participation rate. Quincy's 206 lead services were replaced at an average construction cost of \$6,860 per lead service and a total of 7,180 feet of new copper water service pipe was installed at an average construction cost of \$197 per foot. The City considers its lead removal project a tremendous success and, as the first community to participate in MWRA's Lead Loan Program, received an *Outstanding Performance and Achievement Award* from MassDEP and recognition from Clean Water Action for the project's health benefits.



Sample photo of lead-lined steel water service line removed in Quincy



Quincy lead removal project

Winchester received a \$500,000 loan in March 2017 and an additional \$500,000 in June 2018 to fund phases 1 and 2 of its lead service line removal program. The Town is paying the first \$1,200 of costs for replacing private-side lead services and property owners are billed for the remainder. Winchester initially suspected as many as 240 private-side lead services. At completion of a detailed inventory, 20 lead services (mostly private-side) and approximately 720 lead goosenecks on the public-side were identified. Winchester removed 52 lead goosenecks during 2016, prior to the MWRA loan project. The phase 1 portion of the MWRA loan project (2017 and 2018) removed 19 of the 20 identified private-side lead services (one property owner refused to participate). An additional 36 lead goosenecks on the public-side were also removed. The phase 2 construction program will continue public-side lead gooseneck removal in 2019. The 19 of 20 lead service line replacements represent a 95% success rate (noting the relatively small number of lead services present). Winchester's 56 total service lines were replaced at an average construction cost of \$7,890 per lead service and a total of 1,420 feet of new copper water service pipe was installed at an average construction cost of \$310 per foot.

Newton received a \$4.0 million loan in May 2017 to fund the planning, design, construction, and construction services for lead service line replacements. The initial planning/design estimated up to 627 services with some lead portion (lead service, lead gooseneck, or lead fittings). The project targeted all 627 identified/suspect lead services with the City providing a customer incentive of a 10-year interest-free loan for all private-side lead service removal costs. Design was complete in spring 2017 and construction began in summer 2017 and was substantially complete in December 2018. Upon project completion, 427 full or partial services were replaced at a construction cost of \$2.67 million. Only 8 private-side lead services (out of a total of 300 private-side) were left in place due to property owners' refusal to participate in the program, a success rate of 97%. The high success rate may be due to the extensive outreach to property owners by the City and its consultant. Based on construction test pits, no action was determined to be needed at 187 services included in the initial screening. Newton's project was completed at an average construction cost of \$6,250 per lead service and a total of 18,860 feet of new copper water service pipe was installed at an average construction cost of \$142 per foot. Newton spent an additional \$544,000 on engineering services to design and coordinate the lead removal program (an additional \$1,270 per lead service replaced).



Long lead service line replacement in Newton

Marlborough received a \$1.0 million loan in September 2017 to fund the replacement of approximately 200 lead service lines as the first phase of a large project targeting replacement of all 1,350 lead service lines. Marlborough is paying the full cost of both public and private lead service line replacements. The City is paying separately for the project planning, design, and construction services and has developed a detailed spreadsheet inventory of all public/private lead services. The construction project began in May 2018 and through September 2018, a total of 176 lead services had been replaced at a construction cost of \$1.01 million. Marlborough's 176 lead services were replaced at an average construction cost of \$5,835 per lead service and a total of 7,694 feet of new copper water service pipe was installed at an average construction cost of \$130 per foot. The City is planning to apply for an additional \$1.0 million lead loan from MWRA in February 2019 to fund its phase 2 project.

Revere received a \$195,000 loan in November 2017 to fund the design portion of its lead service line replacement project. Revere is paying the full cost of both public and private lead service line replacements. As part of the City's comprehensive water meter replacement program, Revere had the meter installers inspect and catalog all lead service lines entering each property. This effort resulted in a detailed spreadsheet of 282 properties with lead services. For many of these properties, the installation of a new water meter was delayed and performed concurrently with the replacement of the lead service line. The lead service line replacement design for up to 300 lead services was completed in April 2018 and the construction bids were opened in June 2018. The low bid construction cost for the entire project was \$2.36 million, which is being funded through an SRF loan. After removing \$270,000 associated with the new meter installs, the lead service line construction bid was \$2.09 million. For the estimated 300 lead services, the average bid price is \$6,960 per lead service and \$510 per foot of new copper water service line. The construction project began in the fall 2018 with first 15 lead services replaced. Construction will continue in spring 2019.

Winthrop received a \$284,000 loan in December 2017 to fund the replacement of an estimated 37 lead services. This work was Winthrop's first phase of lead service line removals and was associated with a specific water main construction project (local Contract 5 that received MWRA Local Water System Assistance Program funding). Winthrop paid the full cost of both public and private lead service line replacements. The completed project actually removed 73 total lead services at a cost of \$354,000 (of which \$284,000 came from the LLP). In CY17/18, an additional 45 lead services were also removed under a separate large water main replacement project. Winthrop's lead services were replaced at an average construction cost of \$4,850 per lead service and \$204 per foot of new copper water service line. A second phase LLP funding is possible for FY20 to finance an expanded program to replace some of the estimated 1,282 remaining lead services in Winthrop (estimated as 753 full and 529 private-side only lead services).

Needham received a \$1.0 million loan in June 2018 targeting the removal of 154 identified public/private lead services and 1,047 lead goosenecks. Needham is paying the full cost of both public and private lead service line replacements. Needham bid a 3-year construction contract for lead service line and lead gooseneck removals covering the 2017, 2018, and 2019 construction season. Through the first two years of the contract, 14 full lead services, 26 private-side only lead services, and 199 lead goosenecks (main to sidewalk replacement) have been completed for a total construction cost of \$656,150. Needham's lead services were replaced at an average construction cost of \$2,745 per lead service. The construction is scheduled to continue in 2019 to remove a portion of the 114 lead services and 848 lead goosenecks that remain.

Everett received a \$1.0 million loan in December 2018 targeting the removal of the first 150 of a total 900 estimated public/private lead services. Everett will be paying the full cost of public and private side lead service replacements. During fall 2018/winter 2019, Everett's public outreach work has begun and design of public bid documents is ongoing. The construction work is scheduled to begin during the 2019 construction season. The total number of lead services was estimated at 900 based on an FY18 City review of water service records. Everett also estimates 3,000 properties with water service of unknown material. The \$1.0 million loan from MWRA will fund phase 1 of a planned multi-phased lead removal program.

Chelsea received a \$100,000 loan in December 2018 targeting the inventory, planning, design, and initial replacement construction of a small number of private-side lead services. Chelsea will be paying the full cost of public and private side lead service replacements. The planning/design phase will include a comprehensive review of all City water projects over the last 10-15 years which may have identified private-side lead services that were not replaced during the original construction projects. In parallel with this project, Chelsea is updating its current inventory of lead service lines through additional research of City records, a public awareness campaign on lead health issues, as well as direct door-to-door canvassing of suspect properties to inspect for lead service lines. To maximize inventory results, Chelsea is teaming City employees and the engineering consultant with local volunteers from GreenRoots, a community-based organization. The City and GreenRoots received an award from Clean Water Action for the project's health benefits. Chelsea is planning a follow-up application for a second MWRA lead service line replacement loan in FY20 that will fund the second phase construction project.

Boston (BWSC) BWSC's lead service line removal program (no MWRA funding) pays the first \$2,000 of cost of private-side lead service line removals and property owner pays the remainder with the option of spreading the payment out over four years via their monthly water bill. For small house lots with a relatively short water service line, BWSC finds the \$2,000 often covers the full cost of the private-side lead service removal.