ATTACHMENT 1

Detailed Report on the Greater Cincinnati Water Works

Enhanced Lead Service Lines (LSLs) Mitigation Strategies,

Including Short-Term, "Low Hanging Fruit" and Long-Term Initiatives

Introduction

For decades, Greater Cincinnati Water Works (GCWW) has taken a proactive approach to lead corrosion control and has continued to look for ways to refine and enhance this program. The purpose of this report is to provide an overview of the short-term and the long-term Lead Service Line (LSL) replacement strategies, including the processes involved, resources needed, and cost of such strategies where applicable. The report also highlights those items where Council action is needed to further a specific strategy. In general, the strategies have been grouped into two categories; communication action items which mainly focus on customer education and outreach (Tier 1 strategies), and activities that will focus on strategies designed to reduce the risks presented by the presence of LSLs as well as to provide mechanisms to encourage eventual removal of all lead service lines (Tier 2 strategies). Tier 2 strategies involve short term, high impact, low resource action items (the "low hanging fruit") that could be implemented within a reasonable amount of time. Some of these simply involve revamping and standardizing our internal processes. The longer term Tier 2 strategies involve LSL replacement options, which will require planning, allocation of resources, and funding mechanisms, including a customer assistance program to incentivize customers to replace the private portion of their LSL. The time horizon for implementing GCWW's preferred long-term strategy is approximately 15 years at an annual capital investment of $9 million.

GCWW's Two – Tier Approach

GCWW continues to address lead service lines in the City of Cincinnati with a two tier approach:

- Tier 1-Education and Communication,
- Tier 2-Complete Removal of Lead Service Lines (public and private portion).

The ultimate goal is to become a 'lead safe' water City, greatly minimizing the presence, and therefore risk, of lead throughout our properties, homes, and businesses.

There are many steps that need to work in concert to reach the overall goal. Many education and outreach efforts are currently in progress, with planning underway to address the 'low hanging fruit' as well as development of execution plans for the longer range efforts of actual lead service line replacement.

The following diagram summarizes the efforts that will collectively help us reach the "lead safe water" goal for the City of Cincinnati. Each effort is then explained in more detail.

Tier 1 Education & Communication	Tier 2 Low Hanging Fruit	Tier 2 Long-term LSL Removal
•Lead Website •651-LEAD •Letters •Social Media •Speakers Bureau •Sampling & Faucet Filters •Pitcher Kits	•Replace LSL in schools •Review neighborhood data to prioritize area for removal of LSL •FOD Process-City Property •FOD Process-Private Property •Vacant Lots (buildings razed) •Customer paying base charge/no occupancy •Permit Expansion •Restaurant and Food License Renewals •No re-use of LSL •Real Estate Property Disclosure Forms •Lobbying Efforts •Certify list of plumbers •Provide assistance to schools	•Prioritize Key areas to Impact Children-remove lead service lines •Continue water main replacement program (additional LSL removal) •Lead Service Line Replacement Program (public portion) •Lead Service Line Replacement Program (private portion) •Customer Assistance Program •Seek Grants •Ongoing Communication

Tier 1 Education and Communication

Lead Website

GCWW launched a new website on March 3, 2016. Media and social media coverage helped publicize that the website was available. The stats from people accessing the website follow (as of 5/19/16).

Totals from City of Cincinnati Website (Google Analytics)

Lead Homepage	Check Customer Owned Private Service	Check Utility Owned Public Service	Regulations	Service Line Ownership
6753	3129	1047	180	400

These stats show, overall, good site reach and growth; the message is getting out there and customers are going to the website for further education.

- The main web page has been accessed nearly 6800 times;
- Over 3000 customers have checked the Customer Owned Private Service; over 1000 have checked the Utility Owned Public Service;
- Some (180) people are interested in the lead regulations; and
- Four hundred customers are interested in a future service line assistance program to help them remove their portion of the lead service line.

651-LEAD

GCWW now has a dedicated phone number for customers to speak directly with a call center representative regarding lead. At this time, minimal calls related to lead occur each day.

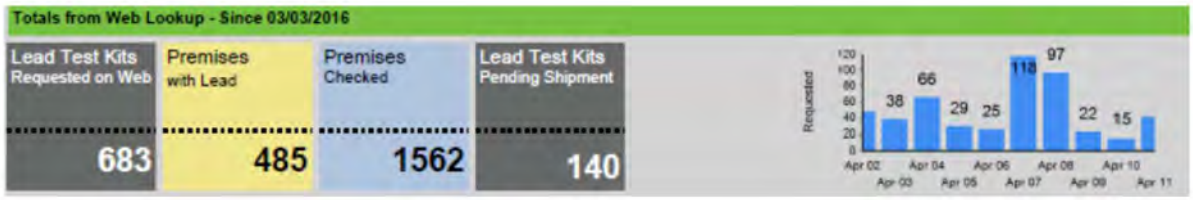
Letters

GCWW made a decision to send a letter to 20,724 customers regarding potential lead service lines in GCWW's system (the public portion of the service line). This letter was not to alarm any customers, but to inform them that the potential of a lead service line exists. The letter was a way to provide more education and communication to customers. GCWW aims to address any lead issues directly and swiftly by being proactive and communicating with customers. The letters were mailed March 25 through March 30, 2016.

The letters asked the customers to go to the website to learn more and use the following tools:

- *Lookup tool* to determine if public portion of the lead service line leading to the premise is lead
- *Lead Service line scratch test video* to determine if the line is lead
- Request a *lead test kit, if interested (expected many customers to take advantage of this)*
- Sign up to learn more about a potential *GCWW Lead line replacement customer assistance program*

The data shows that right after the letters were mailed, customers were very interested in sample kits to have their water tested. GCWW will continue to provide sample kits and analyze samples for customers. To date, over 1400 sample kits have been provided to customers; over 800 have been returned and analyzed.



Social Media

GCWW is using social media more to communicate. National statistics show that social media is an inexpensive way to reach many people at once. Facebook continues to be the most popular social media outlet amongst adults, with total US daily usage up to 72%! With this level of activity, GCWW regularly seeks ways to communicate more via social media. Examples of how social media has been used:

- The FYI memo from the City Manager regarding safe drinking water was posted; people reached = 1196.
- The City of Cincinnati Government Facebook page also shared the message and they have over 3000 followers (so more people to see the message and further understand the lead issue).
- A customer letter was sent to a select group; the media covered this effort and a message was posted on Facebook and boosted so it would reach more people. People reached = 11,450. In addition, 69 people took the post and shared it on their page. The average Facebook user now has about 338 friends, so roughly, another 23,322 could possibly see the message.

Speaker's Bureau

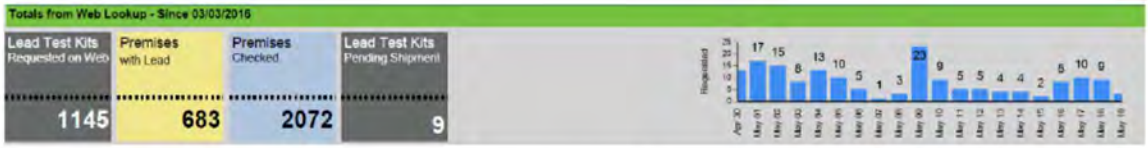
From various articles and interviews across the country, customers can easily become confused about pertains to our system and where to get information. A speaker's bureau was started to further educate the public about lead in drinking water. Small groups of employees composed of GCWW's lead team and a few other employees attend monthly community council meetings across the City, answering questions about lead and providing key information to the public.

Date	Meeting/Location	Speakers	# of Attendees
April 11	Pendleton Neighborhood Council	C. Bailey	21
May 3	Pleasant Ridge Community Council	V. Arnette	45
May 9	South Cumminsville Community Council	R. Cosby, B. Camp, C. Bailey	32
May 10	Spring Grove Village Community Council	J. Vogt, H. Noe, C. Brown, C. Bailey	19
May 12	Walnut Hills Area Council	R. Weber, J. Fleming	60
May 16	Columbia Tusculum Community Council	J. Swertfeger, M. Ginty, N. Bonner, L. Jordan	25
May 16	Northside Community Council	H. Noe, J. Vogt, R. Thompson, C. Bailey	63
May 16	East Price Hill Improvement Association	V. Arnette, J. Kramer, A. Schmitz	40

To date, customers are sharing that they like us out in the community and are pleased we are proactively attending neighborhood meetings, answering questions and partnering with groups to implement solutions.

Sampling and Faucet Filters

Customers can request to have their water tested by GCWW, free of charge. This option helps the utility know where there are concerns in the system and allows the customer to quickly know their water quality in the home and begin to mitigate risks, if needed. Customers continue to request sample kits each day.



If a sample is analyzed and the results are greater than 15ppb, the following occurs:

- GCWW staff calls the customer to explain the results, discuss ways to mitigate risks and inform the customer the long-term solution is to completely remove the service line, the public portion and their private portion.
- GCWW mails the results to the customer within 2 days.
- GCWW sends the customer a faucet filter as a short-term, additional precaution to mitigate risk.

This sampling service is not offered by all utilities. For GCWW, this service is helpful to the customers and essential to GCWW in fulfilling public health and safety goals.

Pitcher Kits

The last effort under Tier 1 provides pitcher kits to residents in some cases. When GCWW works to replace or repair water mains and completes a partial (removal of the public portion of the lead service line only), then the lead service line is disturbed and could cause temporary high lead levels for the customers. GCWW is cautious of this and aims to take additional precautions with the health of the customer. Therefore, pitcher kits are provided to customers.

GCWW is not required to provide these kits, but feel it is the right thing to do since the line was disturbed. The kit includes a pitcher, a few filters, an informational sheet regarding the filter and why it was provided, and an EPA lead information sheet. This service started 3 years ago. Given the recent situations, it has now become a best practice with many other utilities inquiring about the program. Recent inquiries have occurred from other utilities in Denver CO, Minneapolis MN, Milwaukee WI, Philadelphia PA, Nashville TN, Shorewood WI, and Akron OH.

Tier 2 Complete Removal of Lead Service Lines (public and private portion)

The following sections briefly describe both the short-term and long-term LSL replacement strategies.

Short Term (Low-Hanging-Fruit) Strategies

There are several initiatives that GCWW can implement fairly quickly to impact and reduce the number of lead service lines as well as build a foundation for ultimately achieving complete removal of lead services. These initiatives are explained below.

1. ***Replace Lead Service Lines from 14 Schools in Cincinnati***

   GCWW has conducted an extensive inventory review of LSLs and has determined that 14 schools in the Cincinnati area contain LSLs on the public side. These service lines will be replaced on a priority basis over the next several months. GCWW will also work with school districts to replace their portion of the LSL simultaneously.

2. ***Review neighborhood data to prioritize areas for LSL***

   Demographic data has been collected and tabulated for City of Cincinnati neighborhoods based on the 2014 American Community Survey (ACS). This survey is a mandatory, ongoing statistical survey that samples a small percentage of the population every year, and is conducted by the US Census Bureau. The purpose of the ACS is to help local officials, community leaders and businesses understand the changes taking place in their communities. A subset of this data is shown in the table on the following page, and includes the number of publically (City) owned LSLs for each neighborhood, total population, racial composition, age distribution for children through 14 years of age, and various households statistics. The data has been sorted to highlight the most vulnerable populations with respect to lead, both from potential health risk and financial resource standpoints. The data was prioritized by (1) children under 5, (2) children 5 through 14, (3) percent of households receiving public assistance, and (4) median household income. This will enable GCWW to prioritize areas for public LSL replacement (as discussed in the "Long Term Strategies to Replace LSLs" section of this report).

   From this data, GCWW would prioritize replacement in neighborhoods by first selecting those neighborhoods with a high percentage of children and then reviewing the percentage of lead service lines. For example, Winton Hills has a high percentage of children < 5 years old (21%) and then 5-14 years (18%). However, compared to other neighborhoods, the number of public owned lead service lines remaining are minimal (13). It might be beneficial to target this neighborhood first with minimal active lead service lines remaining to complete this neighborhood easily. This example is just a quick review; additional review and consideration would need to be considered during the prioritization process.

City of Cincinnati Demographic Data (source: 2014 ACS Survey)

			Racial Composition				Age Distribution		Household Data				
Neighborhood	Remaining Publically Owned Active Lead Services	Total Population 2010-2014 ACS 5-year Estimates	Caucasian	Black or African American	Hispanic and Latino	Other	<5 years	5 - 14 years	Median Household Income in the Past 12 Months ($)	% of Households receiving Public Assistance	Unemployement Rates	Housing - Owner Occupied	Housing Data renter Occupied
FAY APARTMENTS	0	1,657	8%	84%	8%	0%	24%	23%	$6,741	24%	19%	8%	92%
WINTON HILLS	13	5,000	10%	84%	2%	3%	21%	18%	$9,681	75%	31%	4%	96%
MILLVALE [4]	5	2,758	2%	91%	1%	6%	19%	18%	$15,975	59%	31%	24%	76%
EAST WESTWOOD	31	3,712	14%	77%	7%	3%	13%	11%	$19,077	51%	30%	29%	71%
PENDLETON	29	1,039	22%	78%	0%	0%	12%	21%	$18,309	51%	33%	18%	82%
SEDAMSVILLE	84	1,919	58%	33%	5%	5%	11%	28%	$18,952	42%	25%	40%	60%
LOWER PRICE HILL	211	1,267	74%	19%	5%	2%	11%	12%	$15,580	62%	34%	19%	81%
RIVERSIDE [8]	84	3,018	71%	22%	3%	4%	10%	13%	$28,183	30%	17%	43%	57%
EAST PRICE HILL	1275	16,022	51%	32%	9%	8%	9%	15%	$27,692	34%	18%	37%	63%
WESTWOOD	1182	26,265	36%	53%	3%	8%	9%	11%	$33,521	22%	19%	31%	69%
WEST PRICE HILL	1493	20,330	66%	24%	5%	5%	9%	15%	$36,027	29%	12%	46%	54%
SOUTH FAIRMOUNT	281	2,760	29%	49%	1%	20%	8%	15%	$20,795	49%	22%	31%	69%
HARTWELL	122	6,406	49%	41%	6%	3%	8%	11%	$35,250	22%	5%	31%	69%
ENGLISH WOODS	0	2,553	10%	83%	1%	6%	8%	18%	$16,268	62%	36%	24%	76%
NORTH FAIRMOUNT [7]	51	2,553	10%	83%	1%	6%	8%	18%	$16,268	62%	36%	24%	76%
CARTHAGE	171	3,222	57%	26%	16%	2%	8%	10%	$29,091	38%	10%	50%	50%
WEST END [5]	331	7,423	28%	67%	2%	3%	8%	8%	$15,010	42%	23%	14%	86%
MOUNT AIRY	5	8,256	31%	62%	5%	2%	8%	19%	$32,225	34%	18%	39%	61%
EVANSTON	1288	6,375	14%	82%	1%	2%	8%	16%	$21,650	33%	15%	49%	51%
OVER-THE-RHINE	324	4,700	38%	50%	3%	9%	7%	11%	$16,931	44%	23%	15%	85%
HYDE PARK	1069	14,717	84%	7%	3%	7%	7%	9%	$75,286	3%	4%	58%	42%
MOUNT WASHINGTON	101	9,960	93%	6%	1%	0%	7%	11%	$52,769	4%	5%	60%	40%
AVONDALE	684	12,418	12%	85%	1%	2%	7%	14%	$17,469	41%	22%	29%	71%
COLLEGE HILL	305	15,544	33%	61%	1%	5%	7%	11%	$33,668	23%	11%	55%	45%
PLEASANT RIDGE	698	8,987	61%	34%	2%	3%	6%	12%	$52,337	11%	7%	55%	45%
WALNUT HILLS	595	5,863	22%	72%	2%	4%	6%	13%	$12,913	43%	22%	20%	80%
ROSELAWN	26	6,957	15%	82%	0%	3%	6%	15%	$21,811	42%	16%	32%	68%
SAYLER PARK	116	3,009	91%	1%	5%	3%	6%	14%	$46,434	16%	11%	71%	29%
MOUNT LOOKOUT	227	6,341	95%	1%	1%	4%	6%	11%	$100,065	1%	2%	72%	28%
KENNEDY HEIGHTS	240	5,278	25%	69%	1%	4%	6%	19%	$38,089	14%	4%	55%	45%
LINWOOD	149	831	98%	1%	1%	1%	6%	15%	$33,929	30%	17%	36%	64%
NORTHSIDE	901	7,402	62%	33%	2%	4%	5%	11%	$37,434	17%	13%	57%	43%
EAST END	215	1,468	89%	9%	0%	2%	5%	9%	$50,469	13%	10%	55%	45%
MADISONVILLE	430	10,596	46%	49%	1%	4%	5%	9%	$36,273	23%	10%	49%	51%
CAMP WASHINGTON	229	1,783	57%	21%	7%	15%	5%	16%	$29,318	34%	18%	20%	80%
SPRING GROVE VILLAGE	113	2,072	33%	57%	4%	5%	5%	14%	$30,854	28%	15%	51%	49%
BOND HILL	170	6,887	6%	89%	1%	4%	5%	14%	$32,408	24%	16%	49%	51%
MOUNT AUBURN	515	5,208	30%	60%	1%	8%	4%	48%	$26,917	23%	21%	37%	63%
CLIFTON	370	8,480	71%	17%	2%	10%	5%	8%	$41,329	10%	5%	37%	63%
NORTH AVONDALE	178	5,878	47%	46%	2%	5%	4%	9%	$61,633	22%	10%	54%	46%
PADDOCK HILLS [6]	17	5,878	47%	46%	2%	5%	4%	9%	$61,633	22%	10%	54%	46%
EAST WALNUT HILLS	348	5,095	58%	35%	1%	5%	4%	8%	$45,000	16%	9%	44%	56%
OAKLEY	369	10,366	83%	9%	2%	5%	4%	4%	$49,440	9%	4%	41%	59%
COLUMBIA TUSCULUM [1]	135	2,983	95%	2%	1%	2%	3%	7%	$90,642	1%	3%	65%	35%
CORRYVILLE	293	3,226	48%	33%	1%	17%	3%	6%	$19,521	19%	13%	11%	89%
CUF	589	18,525	73%	11%	2%	13%	2%	3%	$23,323	11%	10%	18%	82%
CALIFORNIA	19	1,101	95%	0%	3%	2%	1%	15%	$148,500	4%	15%	89%	11%
MOUNT ADAMS	111	1,569	94%	2%	1%	3%	1%	3%	$87,426	1%	2%	42%	58%
HEIGHTS [2]	111	8,209	87%	11%	2%	0%	1%	3%	$20,578	2%	13%	18%	82%
CBD/RIVERFRONT	78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
QUEENSGATE [3]	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SOUTH CUMMINSVILLE	187	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total	16303	323,890											

Notes:

1. Columbia Tusculum tract 47.01 census data is also included within data for Mt. Lookout
2. Heights tract 29 & 30 census data is included within data for CUF
3. Queensgate tract 263 has been combined with Lower Price Hill and is already included
4. Millvale tract 77 is the same as South Cumminsville
5. Downtown CBD tract 265 is combined and included in census data for West End
6. North Avondale tract 65 is the same as Paddock Hills
7. North Fairmount tract 86.01 is the same as English Woods
8. Sedamsville tract 101 is included within census data for Riverside

3. ***Use the GCWW's "Ferrule Ordered Drawn" or "FOD" process to abandon Lead Service Lines on <u>City Owned Properties</u>***

The City of Cincinnati owns properties that have 40 active LSLs and 31 of these lines have had no water consumption in the last 12 months. These LSLs are associated with seven City departments as shown below. GCWW recommends removing/replacing these lead service lines. For services that are determined to need to remain active, GCWW recommends complete LSL replacement. Furthermore, GCWW will assist the affected City Departments to understand this process and ensure complete removal of the line.

City Department	# of Premises	Consumption within year
Fire	1	Yes
Parks	4	Yes
CRC	6	Yes
Econ Dev	16	Yes/No
DPS	1	No
City of Cincinnati	2	No
Community Dev	8	No
Ent. Services-Parking	1	No
DOTE	1	No

4. ***Vacant Lots - (Properties where buildings have been razed)***

Currently, there are 215 customer accounts with demolished properties that have not paid their water charges for the last year and contain lead service lines on the utility side. GCWW has sent letters to these customers and will use the FOD process to eliminate these LSL. As a condition to continue service and to provide the safe drinking water for these demolished properties, GCWW is recommending removing the public portion of the lead service lines. To re-establish service, the owner will have to replace their portion of the lead service line prior to service activation.

5. ***Customer paying base charge/no occupancy***

There are an additional 224 accounts where customers are paying only base water charges, meaning there has been no recent consumption charge (as of the last 12 months). Many of these properties may be waiting on a future development, and are paying the base water charge to keep the account active to avoid a future tap in fee. GCWW will

abandon and remove the lead service now, and waive any future tap in fees for reconnection of a new service to the property if and when development would occur. Providing this option would require some changes to GCWW's rules and regulations.

6. ***Permit Expansion: Utilize City issued permits and licenses to educate and/or require LSL replacement***

The City of Cincinnati Building and Inspection Department accesses many properties that have active LSLs. Often, these properties undergo renovations that do not include the building's plumbing, but could be an opportunity to remove the LSL if it exist. The Building and Inspection Department is currently not able to inspect or review plumbing material in a building unless specifically tasked with it. GCWW is requesting authority be given to the Building and Inspection Department to review the internal plumbing materials for lead and provide data to GCWW to assist with removal of lead service lines.

The appropriate legislative or other action would need to be written and enacted to allow the Building & Inspection Department to evaluate the material composition of service lines in properties and buildings they normally inspect. The purpose would be to educate the owner and to create a plan to eliminate any existing LSLs in a coordinated effort with GCWW. Moreover, GCWW recommends a threshold dollar amount be established such that when a building is renovated and the proposed improvements exceed this monetary threshold, the LSL would need to be replaced as a condition of permit approval.

Therefore, GCWW has two specific recommendations to implement this strategy:

a) The Building and Inspection Department be given the authority by the City to evaluate plumbing materials within a building site in order to determine if LSL exist. By doing so, an educated owner can work with GCWW to create a replacement strategy for that property and building.
b) The Building and Inspection Department be given authority by the City to create a threshold on renovation projects requiring the replacement of LSL as a condition of permit approval.

7. ***Restaurant and Food License Renewals***

There are 44 restaurants and food establishments that currently have lead service lines on their premise. Investigate the possibility of utilizing the restaurant and food license renewal process to encourage, promote, and or require LSL replacement. This would involve preparing the appropriate legislative action to require restaurants, cafes, bars, grills, etc.to replace existing LSL supplying the property, as well as update plumbing fixtures to meet codes concerning lead content as a condition of license renewal.

8. ***Modify GCWW Rules and Regulations to Not Allow for the Re-use of an existing lead service line***

Current GCWW Rules and Regulations allow the use of any service connection as long as the customer remains current on the account. This includes those properties where no water use is occurring, such as on a vacant lot that is waiting for redevelopment. Since the account is current from a billing standpoint, the customer would be allowed to reuse a LSL in their redevelopment plans. GCWW would change this rule through its Rules and Regulations so the owner cannot re-use the lead service line on the public side. The service line would need to be replaced by GCWW and the property owner would be required to replace the lead service line on the private side prior to receiving service again.

9. ***Amend Residential Real-estate Property Disclosure Forms***

Generally, homebuyers are not informed of the presence of a private LSL on the property they are interested in purchasing. While buyers can obtain information from GCWW's website as to public LSLs, there is no such inventory for the private portion of the LSLs and LSLs are not generally reported on the prescribed Ohio Disclosure form. If included on the Disclosure form, prospective purchasers, realtors, home inspectors, etc. would be alerted to the issue and would likely correct or seek to have the problem corrected through the property sale.

Since the State of Ohio, through adoption of Ohio Revised Code Section 5302.30, has mandated the Disclosure Form and its general contents, Ohio has effectively declared this subject-matter to be of state-wide concern. Therefore GCWW would partner with other state water utilities and cities to collectively contact Ohio's Director of Commerce and request the Form be modified. In support of this position, GCWW points to the following language of Section 5302.30(D) where it partially lists the facts and defects to be included in the Director of Commerce's Disclosure Form, "... including ... any material defects in the property that are within the actual knowledge of the transferor." GCWW believes that ORC Section 5302.30, as written, would allow the Director of Commerce to list "lead water service lines" with the other items on the prescribed form, avoiding the need for any change by the Ohio General Assembly to Section 5302.30. If the Director of Commerce were to determine that Ohio law had to be changed to add customer-side, private lead lines, City could pursue this issue with the Ohio General Assembly.

10. ***Utilize Lobbying Efforts at the State Level***

There are various legislative proposals now pending in the Ohio General Assembly on the topic of lead regulation and lead in the water infrastructure. GCWW believes it is advisable for the City that GCWW communicates and works with the City's state lobbyist and Hamilton County's delegation to develop local allies in the Ohio General Assembly who will listen and advocate for GCWWs interests.

More specifically the lobbyist could

i. Track bills in the state house and senate
   a. Notify GCWW early of Bills status and seek GCWW's comments/position
   b. Meet with chiefs of staff and intervene during reconciliation between house and senate bills
ii. Participate in "interested party" review at the specific agency (OEPA)
   a. Help GCWW work with the agency after stakeholder review
   b. Establish a good relationship with Joint Commission Agency Rule Review (JCARR) members and the local General Assembly delegation
iii. Lobby the following current regulatory issues
   a. Exemption of fire hydrants from lead requirements
   b. Extension of rule adoption duration to allow adequate review
iv. Promote GCWW's own legislative wish list
   a. Property Disclosure Form revised for inclusion of lead lines
   b. Funding sources: grant, loans, and tax incentives for property owners and the City

It is important GCWW has a means of expressing its needs and those of affected private property owners regarding legislation, and to have professional assistance in the pursuit of different types of financial help including grants, loan funding, tax incentives and other assistance. Lead service line elimination is a costly proposition for Ohio citizens, water utilities and cities, and all possible types of financial assistance and incentives must be pursued.

11. Provide a list of GCWW Certified Plumbers for Customers

As a resource for homeowners considering LSL replacement, GCWW can provide a list of GCWW Certified Plumbers that are currently permitted to install a service branch from the property line including the meter. Other plumbers may become certified if they meet the requirements of GCWW and the State of Ohio.

GCWW also recommends evaluating a program similar to the CDOTE sidewalk program where plumbers bid to provide LSL replacement costs to GCWW. Homeowners then can hire these plumbers at the set rates, thereby reducing the chances of substantial price hikes.

The process could include the following:

- GCWW would request RFQs to develop a certified list of plumbers within a desired price range to perform the work for customers
- The certified list would then be available to customers

This process would help avoid extreme price fluctuation during the multiple year replacement program.

12. Provide Assistance to Local Schools

Infants and school-age children are one of the most susceptible groups to lead. Testing for lead in school water systems is not mandated by any current regulations. Although not mandated, GCWW has embarked upon an outreach and assistance program to educate local school officials including offering to test water samples for lead at no cost to schools. Through the *3Ts for Reducing Lead in Drinking Water in Schools Guidance Document,* USEPA suggests that schools implement their own water testing program for reducing lead in drinking water as part of their overall plan for reducing environmental threats. Safe and healthy school environments foster healthy children, and may improve student's general performance.

USEPA developed this guidance manual in 2006. Implementing the 3Ts recommendations at any school is the responsibility of the school. The 3Ts are:

- ***Training*** school officials to raise awareness of the potential occurrences, causes, and health effects of lead in drinking water: assist school officials in identifying potential areas where elevated lead may occur; and establishing a testing plan to identify and prioritize testing sites
- ***Testing*** drinking water in schools to identify potential problems and take corrective actions as necessary
- ***Telling*** students, parents, staff, and the larger community about monitoring programs, potential risks, the results of testing, and remediation actions.

GCWW is in the process of working with schools, both public and private, within the service area to educate them regarding lead in water systems and to assist them with plumbing profiles and sampling plans within their schools.

GCWW has initially scheduled four regional meetings for school officials to disseminate information related to lead in water associated with school buildings and plumbing and offer free water testing for lead:

- Saylor Park Recreation Center
- Mt. Washington Recreation Center
- College Hill Recreation Center
- Dunham Recreation Center

As indicated in the table below, these low-hanging fruit, short term strategies will result in 537 additional lead service lines being removed in calendar year 2016.

#	Low Hanging Fruit Item	Action	Action need by	# of Lead Service Lines Removed	Timeframe
1	Replace lead service lines for 14 schools in Cincinnati (high priority)	Remove School public lead service lines; work with school to remove private portion	GCWW	14	June 2016-September 2016
2	Review neighborhood data to prioritize areas for LSL replacements	Review GIS and demographics data and prioritize removals	GCWW		May-July 2016
3	FOD-City Owned Property-consumption	Remove LSL/account closed	GCWW	9	May-Dec 2016
3	FOD-City Owned Property-no consumption	Remove LSL/account closed	GCWW	31	May-Dec 2016
4	Vacant lots- properties where buildings have been razed	Remove LSL/account closed	GCWW	215	May-Dec 2016
5	Customer paying base charge/no occupancy	Remove LSL/ inform customer-replace their portion before service. Change Rules & Regs	GCWW	224	May-Dec 2016
6	Permit Expansion: utilize city issued permits and licenses to educate and/or required LSL replacement	Authorize Building and Inspection Dept. to inspect service lines; make LSL replacement a condition of permit approval	City Council		May-Dec 2016
7	Restaurant and food license renewals	Remove LSL as a condition of license renewal	CHD; City Council	44	May-Dec 2016
8	Modify GCWW Rules and Regulations to Not Allow for the Re-use of an existing lead branch	Change GCWW Rules & Regs	GCWW		May-Dec 2016
9	Amending Residential Real-estate Property Disclosure Forms	Work with other utilities; approach Director of Commerce to change language	GCWW, other utilities, City Council, Director of Commerce		May 2016 - March 2017
10	Utilize Lobbying Efforts at the State Level	work with lobbyists	City Manager/Asst City Manager		May-July 2016
11	Provide a list of GCWW certified plumbers for Customers	RFQs, purchasing review, create and provide list	GCWW Purchasing Dept		May 2016 - March 2017
12	Provide Assistance to Local Schools	Communicate/Educate	GCWW/ CHD		May-Dec 2016

Long-Term Strategies to Replace LSLs

GCWW's ultimate goal is to replace all publicly owned LSLs over a period of time through a focused Capital Improvement Program (CIP) and to help establish programs to assist customers to remove their portion of the service line within the same timeframe. This strategy requires planning, resources, and a funding source for implementation and program administration.

The proposed procedure for replacing the existing public lead service lines (LSL) will be very similar to the current procedure for replacement. When an existing water main is going to be replaced within a right-of-way or easement, any lead service line encountered during the main replacement is also replaced to the property line. Affected customers are notified via letter prior to the water main replacement project that our records indicate the presence of a LSL on their property. The customer is given additional information and are advised to replace their line if it is indeed lead. Additionally, after these partial lead service line replacements, we issue the customer a pitcher kit with filters to mitigate the risk from potential higher levels of lead for the short period of time after the service line is disturbed.

An accelerated lead service line replacement program will utilize the same procedure on a larger scale and in a more compressed schedule. GCWW proposes to create a lead service line replacement program that is independent from the existing CIP water main replacement program. The current water main replacement program takes many factors into consideration when determining which water mains will be replaced, including leak history, break history, flow, maintenance, etc. The LSL program will focus solely on identifying water main replacement candidates based on lead service densities. The LSL density profiles are as follows:

- High Density is defined as greater than 1.5 service lines per 100 feet of main
- Medium Density is defined as between 1.0 and 1.5 service lines per 100 feet of main
- Low Density is defined as less than 1.0 service lines per 100 feet of main

In the case of the Low Density profile, replacing the large amount of water main for relatively few lead service lines is not a cost effective way to replace service lines. Therefore, these LSL's are proposed to be replaced on an individual basis by GCWW crews or subcontractors.

It will require significantly more resources to accomplish these lead replacement projects in addition to the typical CIP water main replacement program. Coupled with the budget increase for typical contractor construction of these projects, GCWW would need additional resources to complete the design and construction administration as well.

To replace the LSL's on a 15 year replacement schedule would require all vacant positions within the GCWW design group to be permanently filled to maximize internal design capabilities and would require the assistance of consultant design services as well. A 15 year program would require at least 1105 LSL's to be replaced per year, and their associated main replacement.

To replace the LSL's on a 10 year replacement schedule would require the vacant positions to be filled and significant assistance from consultants for both design services and potentially inspection services. A 10 year program would require 1660 LSL's to be replaced per year.

To replace the LSL's on a 5 year replacement schedule would require all vacant positions to be filled and would necessitate internal staff to perform no internal design but manage consultants performing all of the lead service line projects in addition to the typical CIP water main replacement projects. A replacement schedule this compressed would require an evaluation period and a ramp up period with the consultant and contracting community before implementing. A 5 year replacement schedule would require 3315 LSL's to be replaced per year. Historically, GCWW has hired consultants to assist in both the design and inspection on CIP projects. When taken as a percentage of the construction costs, GCWW has averaged 20% to design, inspect, and administer the project. These amounts would be in addition to the construction dollars contained in the following chart.

In order to accomplish the LSL replacements according to the three different schedule scenarios (5, 10, 15 year), the cost breakdown will be as shown below. Although the number of public side LSL replacements in recent years has averaged around 400, that may not always be the case since LSL replacement is not the driver for prioritization in the existing capital main replacement program. Therefore, as a conservative approach, the estimates presented in the following table include the costs for replacement of all remaining public portion lead service lines.

Lead Service Line Replacement Scenarios			
	5 year	**10 year**	**15 year**
No. service lines per year	**3315**	**1660**	**1105**
No. of Service Lines			
High Density	6353	6353	6353
Medium Density	3700	3700	3700
Low Density	6519	6519	6519
Total	16572	16572	16572
Construction Cost/service line (SL)			
High Density ($9000/SL * No of service lines)	$57,177,000	$57,177,000	$57,177,000
Medium Density ($16000/SL * No of service lines)	$59,200,000	$59,200,000	$59,200,000
Low Density ($4500/SL * No of service lines)	$29,335,500	$29,335,500	$29,335,500
Total	$145,712,500	$145,712,500	$145,712,500
Total Annual Cost	**$29,142,500**	**$14,571,250**	**$9,714,167**

- High Density is defined as greater than 1.5 service lines per 100 feet of main.
- Medium Density is defined as between 1.0 and 1.5 service lines per 100 feet of main.

- Low Density is defined as less than 1.0 service lines per 100 feet of main and the per service line cost assumes the lead service lines will be replaced individually and not as a part of a water main replacement project.
- The construction dollars indicated are present value and do not include escalations for construction cost increases or borrowing costs over the duration of the replacement schedule.

These estimates do not include any contingency amounts and utilize average service line costs on CIP water main replacement projects.

Additional Design Staffing Needs per plan					
X year plan	Civil Engineering Technician	Technical Supervisors	Senior Engineers	Physical space needs	Annual personnel cost
5 year plan	1	2	1	600 sf	$320,000
10 year plan	0	1	1	225 sf	$160,000
15 year plan	0	0	0	0 sf	$0

Construction Staffing Need									
X year Plan	Construction Inspectors	Assistant Supervisor of Inspection	Survey Technician	Senior Engineer	Supervising Engineer	Annual Personnel Cost	Vehicle/ Equipment needs	External Consultants needed	External Consultants needed
5 year plan	5	1	3	1	1	$880,000	$70,000	Design	Inspection
10 year plan	2	1	3	0	0	$480,000	$57,000	Design	Inspection
15 year plan	0	0	0	0	0	$0	$0	Some Design	

From a survey and construction inspection needs perspective, for a 15 year scenario, it is expected that the survey and inspection groups would be fully staffed and would not require any additional resources.

For a 10 year scenario, it is expected that a dedicated work group solely focused on LSL replacement would not be required but additional resources would be required to accommodate the additional workload. These additional resources would be incorporated within the existing workgroups and would consist of an Assistant Supervisor of Construction, 2 Construction Inspectors, and a full survey crew (Surveyor, CET3, and a CET2). The total cost for this staff would be $480,000 annually and does not include costs for any additional workspace, office and/or field equipment, or vehicles.

Under a five year plan, a dedicated work group solely focused on LSL replacement would need to be created above and beyond the information provided above. This work group would be led by a Supervising Engineer and would consist of a Senior Engineer, an Assistant Supervisor of Construction Inspection, 5 Construction Inspectors, and a full survey crew. The total cost for this staff would be $880,000 annually and does not include costs for any additional workspace, office and/or field equipment, or vehicles. Additional time to conduct a refined evaluation would need to be granted.

GCWW Recommendations and Financial Incentives for Customers to Encourage Private LSLs Replacement

Whether the LSLs are publicly owned or privately owned, GCWW takes the presence of LSLs in its system very seriously and has every intent to see that all LSLs are removed from the system. GCWW prefers the option of replacing all publicly owned lead service lines over a 15-year cycle since this would allow GCWW to use its internal resources and fully understand the work that has been done on the system. This implementation duration also gives an opportunity to systematically plan and execute the program.

To move the entire system forward to a lead safe water City, ideally, the customer portion of the lead service lines should be replaced at or close to the same time as the public. This involves removal of privately owned portions of LSLs, the total number of which are unknown to GCWW but is estimated to be greater than 27,000. Funding will be a limiting factor as to how swiftly both the public and private lead service line eliminations can proceed. Replacement of a private lead service line is estimated at $3,000-$5,000 each, which would amount to a need for at least **$81 million to $135 million in private resources** based on the conservative estimate of 27,000 private LSLs.

Given the significant cost of private LSL replacement, assistance programs will need to be designed to educate customers about the importance of mitigating risk for families and young children moving around the city, as well as the societal benefits of ensuring a safe water supply for future generations. The benefit of replacing their private LSLs simultaneous with the City's public LSL replacement must also be stressed to consumers.

GCWW is working with the Law Department, the City's public finance counsel, and potential partners to investigate options for providing financing assistance to customers, including a possible revolving loan program to allow customers to spread the cost of replacement over several years. Due to the scale of financial resources needed and the general legal limitations on use of public and water funds to work on private infrastructure, more research is needed. The options available under current law need to be understood, and whether changes in local or state law are necessary to create feasible and sustainable financing options. An example includes legislation to declare private LSL replacement as a public purpose and to clearly authorize assessments to private property for private LSL replacement. One possibility that may require changes in state law is a revolving loan program modeled after the PACE (Property Assessed Clean Energy) program administered by the Energy Alliance. With this program, property owners may obtain loans from bond proceeds issued by the Port Authority of Greater Cincinnati for private clean energy improvements (solar panels, etc.) which the owner pays back through assessments on their property tax bill.

In addition, GCWW is aware that grant assistance programs will be necessary for low-income families to afford LSL replacement. GCWW would seek grants to be administered by local agencies that have experience in qualifying candidates and administering these programs.

GCWW recommends the following programs for customer assistance:

1. Property assessments. The cost of the lead service line becomes a tax assessment added annually to the property tax bill to be paid over 5 years (or some other set number of years determined later). GCWW believes ORC 729.06 assessment to property would allow for this option.
    a. GCWW prefers this option as bond rating agencies may not prefer a loan program. In addition, a loan program would complicate any recourse for collection if the customer does not pay the loan for replacing the service line. Finally, collection rates for existing water services are < 25%; concerns exist with collecting these fees from a loan program.
2. Loan Program-Although the property assessment process is preferred, some customers may prefer a short term loan to replace the private portion of the service line. Careful and close screening of customers and their credit standings would need to be considered to maximize repayment of the loan. If a loan program was established, the loan would become a line item on the customer's bill. Loan programs exist in other cities; these programs will be reviewed in greater detail.
3. Assistance programs for low-income families. GCWW would seek grants to be administered by local agencies that have experience in qualifying candidates and administering these programs.
4. Incentives. Given that GCWW has an excellent corrosion control treatment practice and produces high quality drinking water, some customers may not be inclined to replace their private portion of the lead service line. Incentives may need to occur for customers to invest and contribute to the overall goals of becoming a lead safe city. Incentive programs exist in other cities; these programs will be reviewed in greater detail.

Summary

GCWW continues to address lead service lines in the City of Cincinnati with a two tier approach.

Tier 1-Education and Communication efforts are well underway and are proving to be successful in educating the public about lead service lines within water systems. The following initiatives will continue to occur:

- Lead Website, lead.mygcww.org
- Dedicate phone line, 651-LEAD
- Letters to special customer classes regarding potential lead service lines
- Use of Social Media to connect with online customers
- Speaker's Bureau engagements to take the message to community meetings
- Sampling and faucet filters to provide additional data and support to customers
- Pitcher kits for further mitigation of risks when lead lines are disturbed.

Tier 2-Complete Removal of Lead Service Lines initiatives are being researched and are expected to be in place in FY2017. Research and work is occurring to establish the following practices:

- Create a dedicated Lead Service Line Replacement Program. Work to remove LSL in Cincinnati within 15 years (or sooner).
- Establish customer assistance programs
    - Property Assessments
    - Loans
    - Grants
    - Incentives.

Currently, over 400 customers are interested in participating in a customer assistance program to remove their portion of the lead service line. This interest speaks to customers understanding the risk and further understanding that the solution involves the utility, customers and community. GCWW intends to work swiftly to establish Tier 2 solutions.

Additional capital funding will be needed to fund removal of the public portion of the lead service lines. This additional funding will be considered in future bond sales to fund capital projects. Other needs will be itemized and considered in the annual operating budget.

The following tables summarize short-term and long-term solutions to mitigate lead risks.

Greater Cincinnati Water Works is working to make the City of Cincinnati a lead safe city by removing all lead service lines, public and private portions of the lines. This effort will not happen overnight, however, with established communication efforts, short-term solutions, a dedicated lead service line replacement program, and customer assistance programs; lead service lines can be removed throughout the City within 15 years. The City of Cincinnati will then be a lead safe city, capable of attracting new businesses that require high quality, safe, lead-free drinking water and ensuring a plentiful supply of healthy, safe water for many future generations.

#	Short-Term, Low Hanging Fruit Items	Action	Action need by	# of Lead Service Lines Removed	Timeframe
1	Replace lead service lines for 14 schools in Cincinnati (high priority)	Remove School public lead service lines; work with school to remove private portion	GCWW	14	June 2016-September 2016
2	Review neighborhood data to prioritize areas for LSL replacements	Review GIS and demographics data and prioritize removals	GCWW		May-July 2016
3	FOD-City Owned Property-consumption	remove LSL/account closed	GCWW	9	May-Dec 2016
3	FOD-City Owned Property-no consumption	remove LSL/account closed	GCWW	31	May-Dec 2016
4	Vacant lots- properties where buildings have been razed	remove LSL/account closed	GCWW	215	May-Dec 2016
5	Customer paying base charge/no occupancy	Remove LSL/ inform customer-replace their portion before service. Change Rules & Regs	GCWW	224	May-Dec 2016
6	Permit Expansion: utilize city issued permits and licenses to educate and/or required LSL replacement	Authorize Building and Inspection Dept. to inspect service lines; make LSL replacement a condition of permit approval	City Council		May-Dec 2016
7	Restaurant and food license renewals	Remove LSL as a condition of license renewal	CHD; City Council	44	May-Dec 2016
8	Modify GCWW Rules and Regulations to Not Allow for the Re-use of an existing lead branch	Change GCWW Rules & Regs	GCWW		May-Dec 2016
9	Amending Residential Real-estate Property Disclosure Forms	work with other utilities; approach Director of Commerce to change language	GCWW, other utilities, City Council, Director of Commerce		May 2016 - March 2017
10	Utilize Lobbying Efforts at the State Level	work with lobbyists	City Manager/Asst City Manager		May-July 2016
11	Provide a list of GCWW certified plumbers for Customers	RFQs, purchasing review, create and provide list	GCWWPurchasing Dept		May 2016 - March 2017
12	Provide Assistance to Local Schools	Communicate/Educate	GCWW/ CHD		May-Dec 2016

#	Long-Term Solutions	Action	Action need by	# of Lead Service Lines Removed	Timeframe
1	Replace lead service lines throughout 52 neighborhoods	Remove public portion lead service lines through a dedicated Lead Service Line Replacement Program	GCWW	16,572	15 years
2	Property Assessments for customers to remove private portion of lead service lines	Establish process for property assessments	GCWW; Law;		by Q1 2017
3	Establish Loan Program	Loan program process	GCWW; Law; agency to administer loan program		FY2017
4	Seek Grant for low-income families for lead service line replacements	Seek Grants	GCWW; Law; City Council Approval		FY2017
5	Incentives	Establish incentive program	GCWW; Law; City Council Approval		FY2017