ERIE COUNTY WATER AUTHORITY

INTEROFFICE MEMORANDUM

April 21, 2021

To: Jerome D. Schad, Commissioner
Peggy A. LaGree, Commissioner
Michele Iannello - Ward, Commissioner

Cc: Russell J. Stoll, Chief Operating Officer
Karen A. Prendergast, Chief Financial Officer
Terrence D. McCracken, Secretary to the Authority
Margaret A. Murphy, General Counsel

From: Leonard F. Kowalski, Executive Engineer

Subject: EPA Lead and Copper Rule Revision – Consultant Program Manager
ECWA Project No. 201600329

The intent of this memo is to get the conversation started about the impact that the revised Lead and Copper rule with have on the Authority, both financially and administratively. The revised rule will have an impact on almost every department within the Authority and we need a comprehensive strategy in place to help to help implement the upcoming changes.

The revised Lead and Copper Rule was released earlier this year and published in the Federal Register and then put on hold by the Biden Administration. The effective date was extended approximately three months from March 16, 2021 to June 17, 2021. The revised rule in its current format was a comprehensive overhaul of the existing rule and the revisions are currently being reviewed by the Biden Administration. 2024 is when the deadlines start going into effect, so the next three years will be utilized to prepare for the upcoming deadlines.

The Authority has been proactive on several items, such as reviewing our current corrosion control treatment process and we are in the process of starting a pipe loop study well in advance of being required by the rule. The results from the pipe loop study will provide the Authority with the data that will be required to decide on the type of corrosion control treatment that will be required to stay in compliance. The pipe loop study will soon be awarded to a consultant and will take two years to complete.

The lead service line inventory has been in development for several years now, but there are large gaps in the data that we currently have on hand. The inventory is a requirement to be made available to customers to provide information on the type of material their service is made of. The inventory is not only informational, but it will also be utilized to develop our lead service line replacement program, which will involve a large capital investment. There are programs available

that use data and machine learning to help identify the locations that should be focused on and greatly improve the probability of locating and therefore replacing lead services. This program has been used successfully by other utilities.

As shown below in Figure 1, a residential water service has two components; the public side owned by the Authority and the private side owned by the customer. This leads us to the next issue with service replacements and how is the private side going to be handled. The revised rule strongly discourages partial replacements, because removing only one side of the service and leaving a disturbed service in place greatly increases lead levels for the short term. A property owner's reaction to owning a lead service line varies greatly, some choose to replace as soon as possible, and others choose not to replace. Most of the time these decisions are financial in nature, a typical replacement can cost several thousand dollars. For a point of clarification, just because there is lead on the public side does not mean there is lead on the private side. There is a mixed bag of service type configurations, you can have a lead goose neck connected to a galvanized service or a lead service on the public side and a copper service on the private, but at the end of the day, we want to make sure we have the tools in place to remove lead containing materials. The lead containing materials are the items that will trigger public notification requirements.

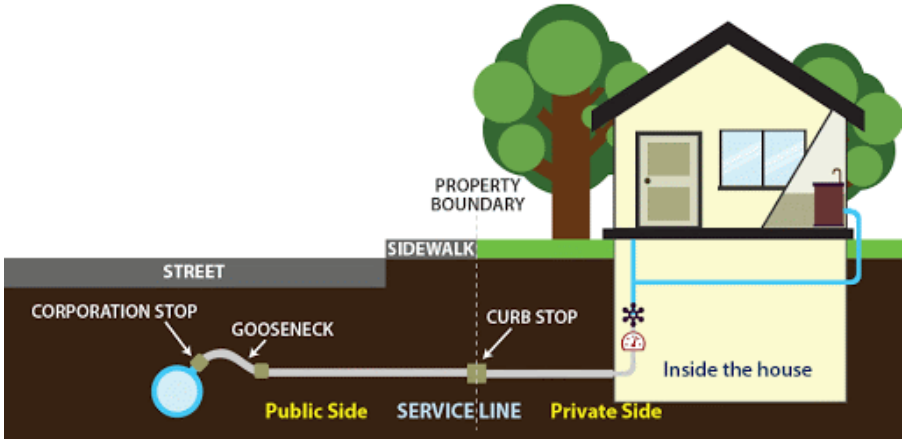

Figure 1

A policy on how to handle private side replacements will need to be developed which needs to include funding strategies. Funding strategies can include insurance programs, grants, or developing internal programs to help fund replacements. There is also a lot of discussion at the Federal level about funding for lead service line replacements being included in an infrastructure package. The private side will also require the development of legal materials that will allow access to the customer's property and document refusals to participate.

One of the more challenging aspects of the revised rule will be the tier site monitoring and the customer communication involved when testing levels exceed action limits. The communication with customer's and the documentation of the communication is going to be critical. The revised

rule is going to put a heavy administrative burden on the Authority, and it is critical that we have a program in place to help manage this effort.

The information provided above is not all inclusive, the revised rule is very comprehensive, and I wanted to touch on a couple of the higher profile issues contained in the rule. Attached is a table from a recent proposal that provides additional detail on the revised rule and the anticipated impacts to the Authority. This is just one example from one consultant. 120Water is another firm that provides a similar service, and they have a very informative website (https://120water.com/).

The recommendation moving forward is to develop a Request for Proposals (RFP) for a Program Manager. The Program Manager would take on the administrative role of coordinating the Authority's response to staying in compliance with the new rule. This would include developing a strategy for the service line inventory, sampling coordination, customer communication and required documentation effort. The RFP will be developed by the Engineering Department and reviewed by the Executive Staff and Director of Water Quality prior to being submitted to the Board for consideration.

Erie County Water Authority

Erie County Water Authority
Corrosion Control Treatment Program
Pipe Loop Demonstration Study

ARCADIS Design & Consultancy for natural and built assets

Anticipated LCRR Impacts for ECWA

Category	Final LCRR	Anticipated Impacts for ECWA			Arcadis Solutions
		Description	Budget	Affected Departments	
Action Levels (ALs)	• Maintains lead AL of 15 µg/L • Adds new lead "Trigger Level" (TL) of 10 µg/L	• If 90th percentile exceeds TL, additional action required for LSLR, Tap Sampling, CCT, WQP Sampling, and Public Outreach • ECWA 'at risk' of exceeding TL	**$1M - $3M** (CIP Impacts) **+$500k-$1M** (Annual O&M incl. chemicals)	1. ECWA Water Quality 2. ECWA Engineering 3. ECWA Exec Team	In parallel, focus on the following: • Aggressively pursue Pipe Loop Demonstration Study to determine optimal CCT, • Develop LSL inventory to understand extent of LSLs in system and develop LSLR plan • Enhance WQP monitoring to promote/maintain Pb(IV) scales with goal of staying below TL
Lead Service Line Inventory	• Records based inventory with a location identifier due within the first three years of the published rule; must be updated annually or triennially (based on compliance sampling frequency) • Must be published online and include link to inventory in Consumer Confidence Report • Must notify customers with LSLs or unknowns annually	• Need to reduce unknowns in LSL inventory • Create publicly available version of inventory • Maintain & update inventory continuously	**$100k - $250k (initial)** *includes GIS updates based on paper copy records and home verifications by field staff **+~$25k (annual updates)**	1. ECWA Water Quality 2. ECWA Engineering 3. ECWA Exec Team incl. IT & Legal	• Leverage BlueConduit's predictive model to efficiently assign a LSL probability for every ECWA parcel and update ECWA's "four quadrant" inventory • Create publicly available map so all customers can view LSL inventory • Leverage LSL inventory for annual notification to customers
Lead Service Line Replacement (LSLR) Plan	• All systems with known or possible LSLs must develop a LSLR plan within the first three years of the published rule	• Develop a LSLR plan	**$50k - $200k** Incorporates existing ECWA department roles and LSL inventory into a comprehensive plan for LSLR	1. ECWA Water Quality 2. ECWA Engineering 3. ECWA Exec Team	• Utilize BlueConduit LSL inventory and predictive modeling Asset Management tools to align LSLR and distribution system renewal planning • Coordinate LSLR plan with tap sampling to maintain sufficient compliance sites • Coordinate prioritization, budgeting and funding with F&A, Legal and OoS
Lead Service Line Replacement (LSLR)	• Required only if the 90th percentile lead is (1) above the lead TL, then conduct LSLR at goal-based rate, agreed upon by the primacy agency or (2) above the AL, then conduct at 3% per year based on 2-year rolling average • Systems must conduct follow up sampling 3 to 6 months following replacement • Systems must replace public portion within 45 days of notification of private replacement (can be extended to 180 days with notification to the State) • Systems must provide procedures for flushing particulates along with a pitcher filter and 6 months of replacement cartridges in the following cases: 45 days prior to planned LSLR or within 24 hours of unplanned or customer-initiated LSLR	• If exceeds the TL, required to replace LSLs at a goal-based rate • If exceeds the AL, required to replace LSLs at 3% per year based on 2-year rolling average • Regardless, planning for aggressive LSLR is likely key component to overall LCRR compliance strategy, especially if maintaining Pb(IV) is selected OCCT	**$60M - $90M** *includes LSL replacement and post replacement pitchers and sampling. Based on MP-79 LSL estimate (i.e. weighted average of known lead occurrence by service district)	1. ECWA Water Quality 2. ECWA Exec Team 3. ECWA Engineering 4. On-call Contractors	• Develop workflows for post-replacement activities, including sampling and pitcher filter distribution • Develop policy on private side LSLs including funding strategies (insurance programs, grants, dedicated charge/fund balance (i.e. self-insured)) • Develop legal materials, including documents that allow access to the customer's property and document refusals to participate • Create customer assistance programs to support low-income customers and vulnerable populations • Evaluate opportunities to align LSLR and distribution system renewal projects • Prepare public notification materials
Tap Sampling	• Shifts tap compliance sampling to locations with the highest lead, specifically requiring systems with LSLs to collect 100% of samples from sites served by a LSL, if available • Changes tap sample site selection tiering criteria • Updates sampling protocol for sites served by a LSL – requires a first liter copper sample and a fifth liter lead sample	• Need to verify more LSL sampling sites (~100 - 150 recommended) to ensure 100% LSLs available for reporting • Collect 5th liter samples from sites served by a LSL • Must shift back to annual monitoring if exceed TL (high possibily that this could occur); If exceed AL, return to standard six-month monitoring	**$50k - $100k (annually)** *Sampling protocols, outreach, reporting materials and laboratory and data analysis to maintain compliance	1. ECWA Water Quality 2. ECWA Legal (Sampling Protocol Review)	• Update sampling pool to focus on sites served by a LSL; identify minimum of two times the standard number of required sites • Update sampling protocols for sites served by a LSL and conduct training or develop education materials • Coordinate and plan with lab and staff for additional time and materials for 5th liter samples • Recommend doing profile sampling now to better understand future compliance reporting relative to TL & AL
CCT	• Calcium hardness no longer a CCT option and specifies any phosphate inhibitor must be orthophosphate • Systems with LSLs that exceed the AL must conduct a harvested pipe loop study; state may require this for any large system with 90th percentile above practical quantitation limit (5 µg/L) • Requires systems to evaluate pH/alkalinity adjustment and two doses for orthophosphate, specifically maintaining 1 and a 3 mg/L as phosphate, when conducting a CCT study (though coupon studies can be used to reduce the number of pipe loop test conditions to two)	• Accelerate pipe loop study and leverage coupon testing results to reduce test conditions • Evaluate viability of ORP to maintain Pb(IV) and affect of PO4 on Pb(IV) scale, critical in determining future CCT strategy • If exceed the TL, required to re-optimize CCT	**$1M - $2M** Pipe loop testing report, recommendations and/or field trials	1. ECWA Water Quality 2. ECWA Engineering 3. ECWA Exec Team	• Complete pipe loop study to re-optimize CCT • Focus on ORP (Pourbaix diagrams) as an option to maintain Pb(IV) scales in parallel with loop study • Understand PO4 affect on Pb(IV) and amorphous aluminum scales through harvested loop study & scale analysis • Fully vet PO4 and ORP simultaneous compliance issues

Anticipated LCRR Impacts for ECWA

Category	Final LCRR	Anticipated Impacts for ECWA			Arcadis Solutions
		Description	Budget	Affected Departments	
Water Quality Parameter (WQP) Sampling	• Eliminates calcium, conductivity and water temperature • Systems must meet all optimal WQPs and not exceed the 90th percentile lead TL to qualify for reduced monitoring	• If exceed the TL, conduct WQP sampling at standard frequency and sites • Likely need additional WQP sites to support Find & Fix Assessments to align with LSL sampling locations	**$50k - $200k (initial)** *WQP locations, sampling equipment & SOPs **+~$50k (annually)** *Sampling, analysis & reporting for compliance	1. ECWA Water Quality 2. ECWA Engineering	• Review and Update WQP sampling Plan • Leverage WQ Monitoring Dashboards to monitor and improve WQP consistency with targets • Perform ORP monitoring and develop system-specific ORP curves to better identify conditions to promote formation of lead(IV) • Determine if additional monitoring &/or chlorine booster sites are needed
Public Notification	• Systems with a 90th percentile exceeding the lead AL must notify all customers within 24 hours. • System must notify consumer with an individual lead tap sample > 15 µg/L as soon as possible but no later than 3 days	• Potential to issue WQ notices regarding lead levels to entire system • High potential to issue WQ notices to individual customers for tap samples above AL	**$50k - $100k** *includes communications plan and outreach support, as needed	1. ECWA Water Quality 2. ECWA Exec Team	• Develop notification materials and process to allow for rapid distribution of required notices
Find-and-Fix Assessment	• For individual lead compliance samples > 15 µg/L, systems must sample WQPs within five days (at or near the site) and collect a follow-up lead tap sample within 30 days to "find" the cause and then "fix" it if within the utilities control. • WQP sampling must be conducted within the same pressure zone, on the same size main and within a half-mile from the tap sample site; if there is not an existing WQP site that meets these criteria, systems must add a WQP site for this specific sampling and then also add this site to its routine WQP monitoring; WQP sites can be added up to two times the standard number of WQP sites.	• Complete a find-and-fix assessment for each compliance sample where the individual lead sample exceeds 15 µg/L • Review WQP sites and prepare to expand number of sites as required	**$20k - $60k** *SOPs for sampling, reporting & data analysis	1. ECWA Water Quality 2. ECWA Engineering 3. ECWA Exec Team	• Develop a plan and reporting templates for follow up efforts in the event a site exceeds 15 ug/L • Develop alternate sampling protocols to assess the cause • Update the hydraulic model to use as a tool to assess operational changes, such as looping • Use WQ Dashboards to analyze WQP and Lead data to support investigations
Sampling in Schools and Childcare Facilities	• Systems must conduct sampling at 20% of elementary schools and licensed childcare facilities per year and conduct sampling at secondary schools on request for 1 testing cycle (five years); must conduct sampling upon request thereafter • Excludes facilities constructed after January 1, 2014	• Conduct required sampling in participating schools and child care facilities	**$40k - $150k (annually)** Database/ArcGIS map of facilities, sampling protocols, notification & education materials	1. ECWA Water Quality 2. ECWA Legal (Definition of Childcare Facility) 3. ECWA Exec Team	• Develop a list and map of schools (up to and including secondary) and licensed childcare facilities • Develop communication materials to encourage participation in sampling program including sampling protocols, education materials and templates for rapid reporting to facilities, health departments and primary agency • Develop & maintain web portal/dashboard for scheduling and reporting.