

NYC Council Introduction 942: **Replacement of Lead Water Service Lines**

Final Report

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Advised by Dr. Steven Cohen

Prepared by:

Noam Shapiro, Zihuan Tang, Ansha Pathak, Beiyi Zhou, Ismail Hidayat,
Josh Argentine, Kapil Kumar Narula, Margot Francini, Yanrong Li, Yiwen Deng

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This report was developed by the following candidates in the Master of Public Administration in Environmental Science and Policy program at Columbia University's School of International and Public Affairs:

Noam Shapiro (Manager), Zihuan Tang (Deputy Manager), Josh Argentine, Yiwen Deng, Margot Francini, Ismail Hidayat, Yanrong Li, Kapil Kumar Narula, Ansha Pathak, Beiyi Zhou

The report was designed by **Ismail Hidayat** and edited by **Noam Shapiro**. GIS Analysis was performed by **Kapil Kumar Narula**.

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This report builds on our research group's Applied Earth Systems Management [Workshop Summer 2025 Report](#), published on August 8th, 2025.

DEFINITIONS / ACRONYMS

ADHD: Attention Deficit/Hyperactivity Disorder

AMI: Area median income, an income statistic set annually by the United States Department of Housing and Urban Development for the New York, NY HUD Metropolitan Fair Market Rent Area.

BIL: Bipartisan Infrastructure Law

BLL: Blood Lead Level

CDC: Centers for Disease Control and Prevention

Child care program: Non-residential regular care for children under 12 years of age by non-relatives, for less than 24 hours per day.

Commissioner: The Commissioner of the New York City Department of Environmental Protection

DDC: New York City Department of Design and Construction

DEP: New York City Department of Environmental Protection

DOE: New York City Department of Education

DOT: New York City Department of Transportation

DWSRF: Drinking Water State Revolving Fund

EPA: United States Environmental Protection Agency

GIS: Geographic Information Systems

HPD: New York City Department of Housing Preservation and Development

Int. 942: New York City Council Introduction 942

KPI: Key Performance Indicators

Laid over in committee: When a bill's sponsor or the Temporary President in the Senate does not want a vote to be taken on a bill, the bill is "laid aside" and no action is taken on the bill.

LCRI: Lead and Copper Rule Improvements

Licensed master plumber: A person holding a current master plumber license issued by the New York City Department of Buildings or someone working under their direct supervision.

LIUNA: The Labourers’ International Union of North America

LSL: Lead Service Line

LSLR: Lead Service Line Replacement

Maximum contaminant level goal: A goal set by the EPA for the maximum “safe” level of concentration for a hazardous material.

MCLG: Maximum Contaminant Level Goal

MOCS: Mayor’s Office of Contract Services

NRDC: Natural Resources Defense Council

NSF/ANSI: The American National Standard establishes minimum requirements for materials, design and construction, and performance of point-of-use filters.

NYCCELP: NYC Coalition to End Lead Poisoning

NYCHA: New York City Housing Authority

NYLCV: New York League of Conservation Voters

NYLCVEF: New York League of Conservation Voters Education Fund

OTPS: Other-Than-Personnel Services

PQL: Pre-Qualified Lists

Property owner: Any individual, limited liability company, or other entity that owns real private property in New York City.

PS: Personnel Services

RFQ: Request for Qualifications

“The Bill”: New York City Council Introduction 942

TCLP: Toxicity Characteristic Leaching Procedure

WHO: World Health Organization

WLL: Water Lead Level

EXECUTIVE SUMMARY

Each day, over 1 billion gallons of fresh, clean water are delivered to New York City. This water travels through thousands of miles of pipes until it arrives at service lines, the water pipes that connect individual households or buildings to the city-owned water mains. While most New Yorkers never think about the pipes that carry water into their homes, every drop of water that comes out of the tap passes through a service line. Before 1961, service lines in New York City were predominantly made of lead. Although most service lines are now made of copper, many older buildings still use their original lead service lines. The lead in these pipes can dislodge, dissolve, and travel through the plumbing into people's drinking water.

The adverse health effects of lead exposure are well-documented. According to the U.S. Environmental Protection Agency, there is no safe dose of lead exposure for any person. Children and pregnant women are disproportionately endangered by lead because of the chemical's effect on organ and brain development. Kidney damage, decreased IQ, increased blood pressure, and cognitive disorders like attention-deficit/hyperactivity disorder (ADHD) are just a few of the negative health outcomes associated with chronic lead exposure in children. While there are steps that can reduce lead exposure in water, the only guaranteed solution is to replace all lead service lines with pipes made of other materials, like copper.

NYC Council Introduction 942: Replacement of Lead Service Lines ("the bill") aims to provide a framework and enforcement mechanism to address the environmental and public health hazard posed by lead pipes. Through mandated replacement, fines for noncompliance, subsidies for disadvantaged communities, and education, the bill aims to replace all lead service lines in New York City within ten years. Given political disagreement over whether property owners or the water authority should pay for service line replacement, we propose a program design centered on a provision in Introduction 942 that mandates the Department of Environmental Protection replace service lines at buildings with childcare programs at no cost to property owners.

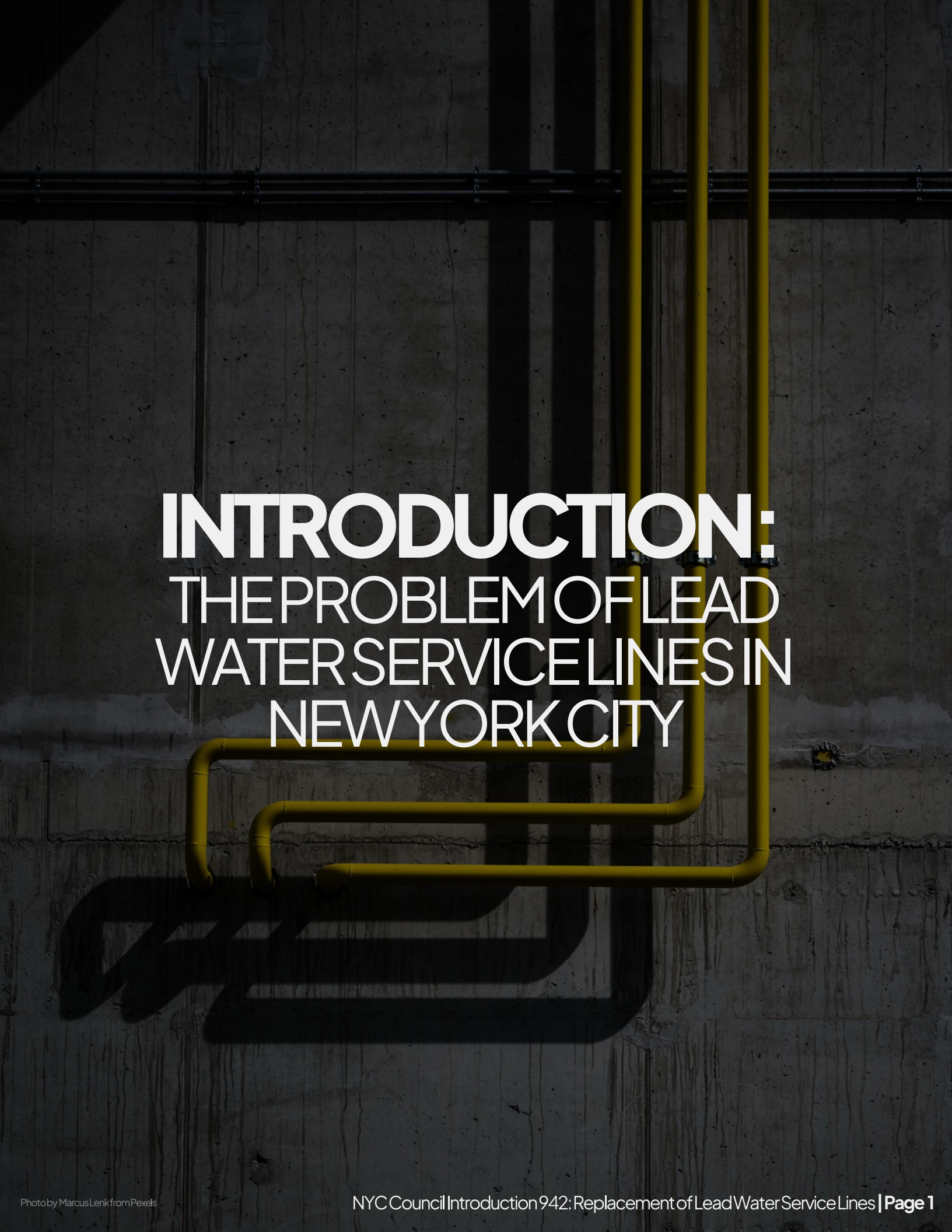
This report provides a detailed plan for how New York City can carry out the first year of a new **Lead Service Line Replacement Program** under Introduction 942 by **remediating 600 of the 808 lead service lines** that feed into regulated childcare facilities. If implemented, this program can **protect over 9,000 children** from lead in drinking water by the end of 2026.

We begin by assessing the scale of the problem and the health effects of lead exposure in drinking water, particularly for children. From there, we analyze the proposed legislation and present a recommended program design for the **Department of Environmental Protection**. The report includes a proposed budget, staffing plan, performance measurement system, and master calendar that will guide the program during its first year. The aim is to demonstrate how New York City can protect children from lead exposure, strengthen community trust, and set the foundation for a safe and equitable ten-year replacement effort beginning in 2026.

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A photograph of a concrete wall with several yellow pipes running vertically and horizontally. The pipes are arranged in a grid-like pattern, with some running straight and others making 90-degree turns. The lighting is dramatic, casting long, dark shadows of the pipes onto the wall. The overall tone is dark and industrial.

INTRODUCTION: THE PROBLEM OF LEAD WATER SERVICE LINES IN NEW YORK CITY

I. Introduction: The Problem of Lead Water Service Lines in New York City

New York City touts its tap water system as the “champagne of drinking water” (New York City Department of Environmental Protection [DEP], 2024). This is because each day, over 1 billion gallons of fresh, clean water are delivered to New York City from reservoirs in the Hudson Valley, the Catskills, and the Delaware watershed. The city’s drinking water is largely unfiltered as it travels hundreds of miles to urban taps. Despite New York City’s \$1.7 billion investment to protect its municipal water system since the 1990s, millions of New Yorkers are exposed to lead-contaminated water daily (Hu, 2018). This is because an estimated 14% of the city’s water service lines are made of lead, and up to 29% are potentially made of lead (New York League of Conservation Voters Education Fund [NYLCVEF], 2024).

When New York City’s water supply hits lead service lines, it picks up dislodged lead particles. From 1858 until about 1961, New York City permitted, and at times encouraged or required, the use of lead service lines (LSLs) (NYCLVEF, 2024). Although the city banned the installation of new lead pipes in 1961 and the use of lead solder in plumbing systems in 1987, thousands of lead service lines are still in use today. Despite the city’s claim that it has the “best, safest, cleanest water in the world,” lead water service lines are poisoning New Yorkers, and most people are unaware of this public health crisis (Adams, 2024).

A Citywide Problem

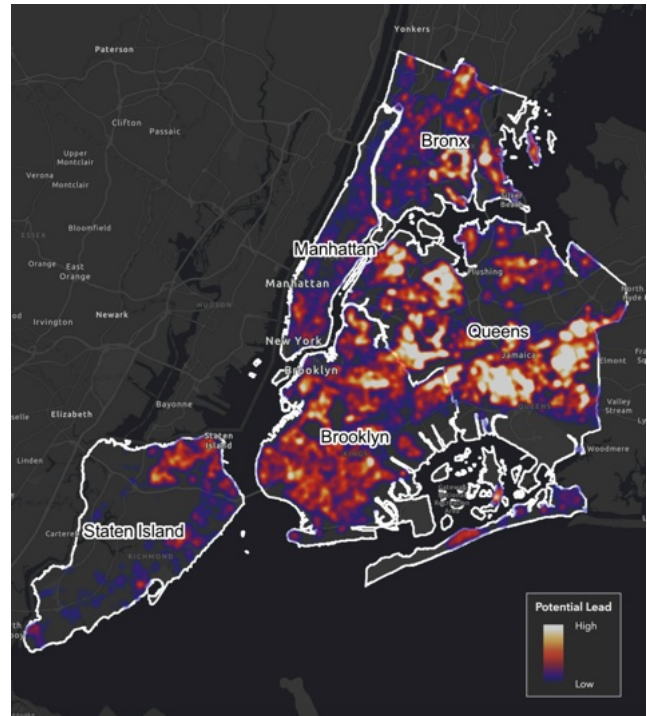


Figure 1. Map of NYC Water Service Lines. Purple indicates lower concentrations of lead service lines; yellow indicates higher concentrations (NYCLCVEF, 2024)

According to the DEP, there are 130,000 confirmed privately owned lead service lines in New York City. The DEP estimates that there might ultimately be as many as 150,000 lead service lines, which is the number it uses for replacement planning and cost estimates (Aggarwala, 2024). These service lines provide water to between 1.3 million and 1.8 million people daily, representing up to 20% of the population or as much as one out of

every five New Yorkers (NYLCVEF, 2024). These pipes are present throughout the city, but are highly concentrated in disadvantaged communities, especially in the Bronx, Brooklyn, and Queens. More than one-third of home water test kits sent into the DEP for analysis by New York City residents over the past decade had some level of lead (Walsh, 2025). Whereas local laws mandate lead paint reporting and remediation, property owners are not obligated to test for, disclose the presence of, or replace lead service lines. This leaves renters uninformed and at risk.

New York City ranks third in the top ten list of U.S. cities with the most lead service lines (Environmental Defense Fund, 2025). A 2024 report by the New York City Coalition to End

Lead Poisoning (NYCCELP) found that about 41% of confirmed lead service lines in the city are located in “disadvantaged communities,” characterized by low-income individuals who face multiple barriers to remediation. Approximately 59% of known lead service lines affect middle- to high-income households (NYLCVEF, 2024). The cost of replacing a lead service line in New York City ranges from \$10,000–\$15,000. The DEP estimates that replacing all of the city’s lead service lines will cost about \$2 billion (Aggarwala, 2024). Although disadvantaged communities might encounter greater barriers to remediation in terms of cost and access to educational services, lead service lines are a city-wide public health issue.

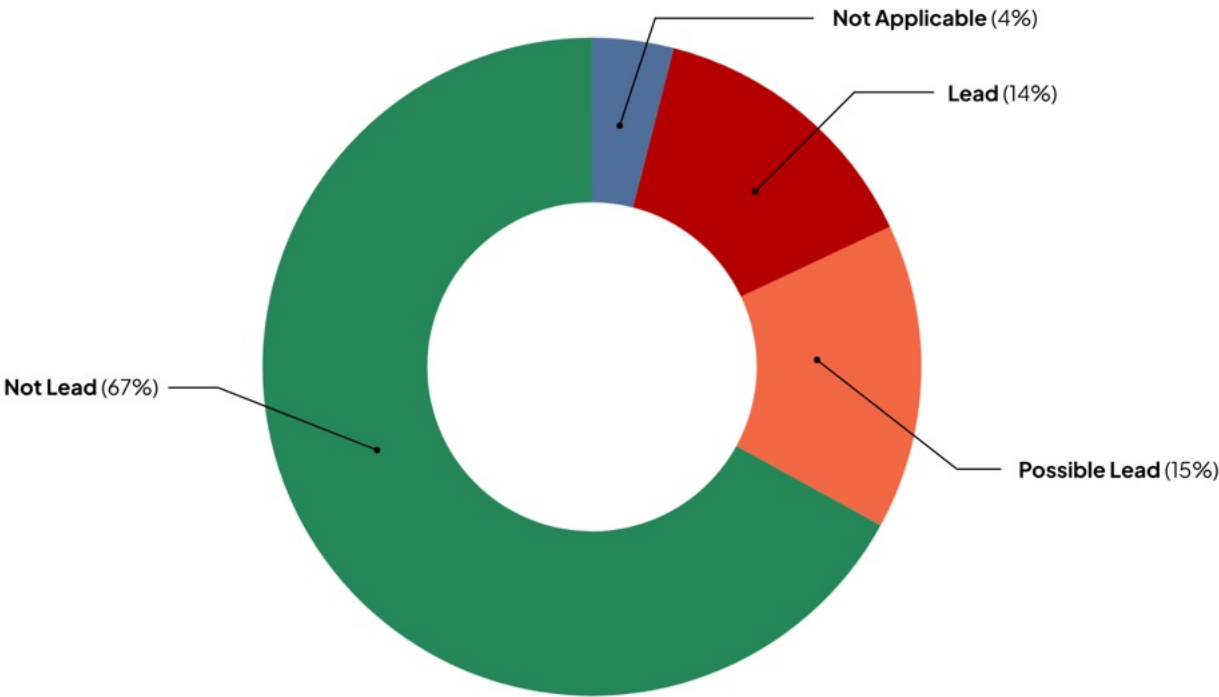


Figure 2. NYC Service Lines Citywide by Material (NYLCVEF, 2024)

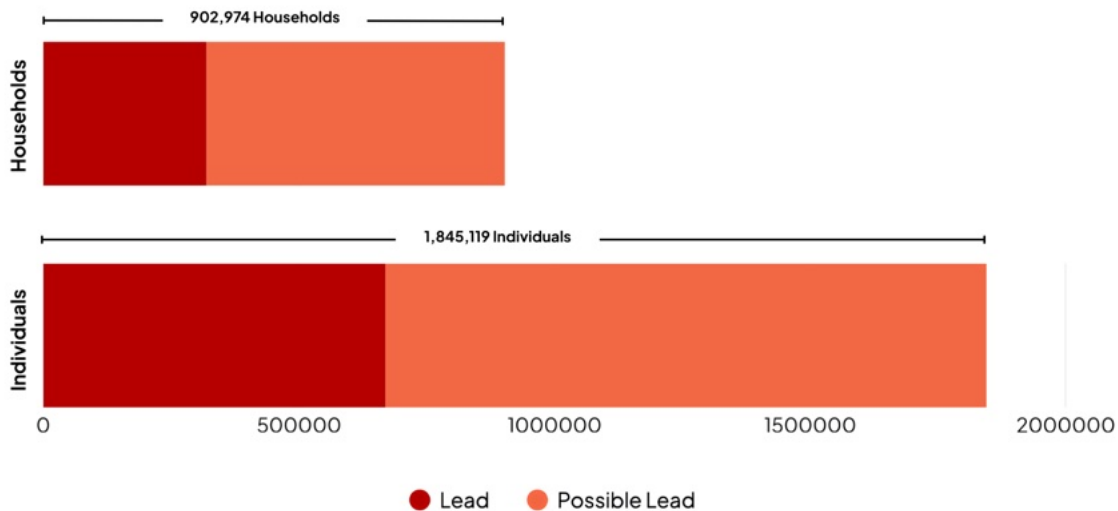


Figure 3. Number of estimated lead/possible lead households and exposed individuals derived by matching property addresses against consumer and voter databases (NYLCVEF, 2024)

New York City’s Response to Date

The Department of Environmental Protection’s inventory was created in response to New York City’s Local Law 65 of 2019, which required the city to compile and publish an initial inventory of each service line and its composition. By 2027, the DEP will be required to complete a “baseline inventory” that includes updated data, such as the material of connectors that join service lines (Scott, 2025).

In 1991, the United States Environmental Protection Agency (EPA) set the federal Maximum Contaminant Level Goal (MCLG) for lead in drinking water at zero (EPA, 2025a). However, because lead is found virtually everywhere, even at near-zero levels, the EPA set a lead action level of 0.015 µg/L (15 ppb). This means that if more than 10% of a water system’s lead sampling exceeds this level, the system is required to inform the public, take action to reduce lead exposure, and replace

all lead pipes. In October 2024, the EPA published its Lead and Copper Rule Improvements (LCRI), which lowered the threshold for taking action from 15 µg/L to 10 µg/L. These stricter standards will compel more water systems, including the DEP, to take immediate action if their lead sampling exceeds this new action level (EPA, 2024a).

From 2019 to 2022, DEP administered a small, state-funded lead service line replacement program for about 600 low-income property owners in the Bronx, Brooklyn, Queens, and Staten Island. Since then, the DEP secured \$20 million in federal grants and \$24 million in zero-interest loans under the Bipartisan Infrastructure Law (BIL) to continue this work in the Bronx (Aggarwala, 2024).

Starting in 2025, the New York City Department of Design and Construction (DDC) began replacing lead service lines at no cost to property owners for properties impacted by water main or sewer work. The DEP also applies the same protocol to its

in-house projects. Approximately 700 service lines are expected to be replaced every year as part of this program (Aggarwala, 2024).

According to the DEP, there are no lead service lines in the city’s water system or on any city property, including schools and public housing properties, such as those managed by the New York City Housing Authority. The New York City Department of Parks & Recreation has also remediated public outdoor water fountains (Aggarwala, 2024; New York City Parks, 2025).

Health Effects of Lead

The chemical similarities between lead and calcium enable lead to interfere with calcium-dependent processes, such as nerve signaling, muscle contraction, and mood-regulating and decision-making functions (Goodsell, 2016; Needleman, 2004). Children are particularly vulnerable to lead’s chemical mimicry as their rapidly

developing systems are more susceptible to toxic exposures (World Health Organization [WHO], 2024; Needleman, 2004). The same is true for pregnant women. The effects of lead are systematic and cumulative, affecting multiple organs, including the brain, kidneys, liver, and bones (WHO, 2024). Lead can remain in the bloodstream for days or months and in human tissues and bones for as long as 25 years (Agency for Toxic Substances and Disease Registry, 2020).

Due to lead’s toxicity, no level of exposure is safe. This is particularly true for children, where even low-level exposure has been associated with reduced IQ, attention deficits, and behavioral issues (Needleman, 2004). Under the EPA’s 2024 Lead and Copper Rule Improvements, all drinking water systems must “proactively” replace lead service lines by 2037 (EPA, 2025). Short-term measures like filtration, corrosion control chemicals, and partial replacements provide only temporary protection.

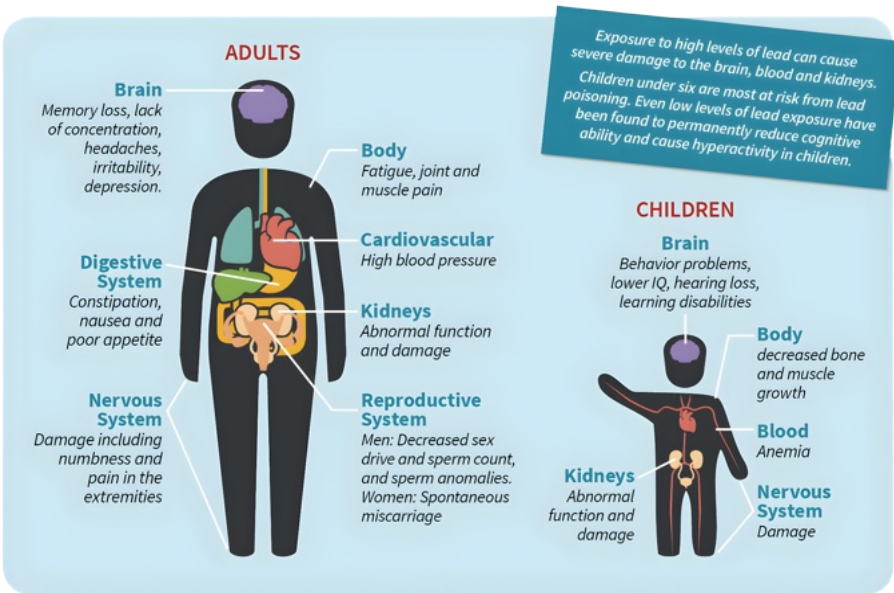


Figure 4. Health impacts of lead exposure in adults and children (Clean Water Action, n.d.)

A close-up, slightly blurred photograph of several water meters and pipes. The meters are dark-colored with white faces and are mounted on blue pipes. One meter in the foreground is clearly visible, showing the brand name 'Hirsh' and 'MULTIMAG' on its face. The background is out of focus, showing more of the same infrastructure.

BILL OVERVIEW: INTRODUCTION 942

II. Bill Overview: Introduction 942

Proposed by New York City Council Member James F. Gennaro (District 24), Introduction 942: “A Local Law to amend the administrative code of the city of New York, in relation to the replacement of lead water service lines” (2024) requires all property owners other than the City of New York to replace lead water service lines with copper or approved alternatives within 10 years of the law’s

effective date. Within ten years, property owners must obtain and submit to the Commissioner of the DEP a certification from a licensed master plumber that no lead water service line exists on their property. The bill applies to property owners because New York City water service lines are considered private property (City of New York, 2025b). A detailed legislative summary appears in Appendix A.

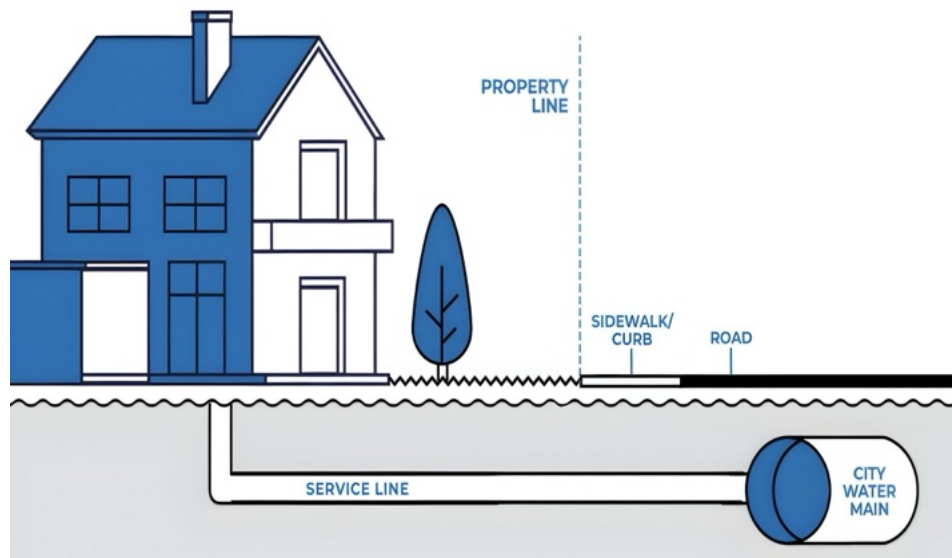


Figure 5. Schematic showing how water is delivered from the city water main to a building through a service line, which can sometimes be made of lead (City of New York, 2024)

DEP Responsibilities

Introduction 942 requires the DEP to create and maintain a financial assistance program for property owners with an annual gross income of no more than 50% of the Area Median Income (AMI), adjusted for household size (Int. 0942–2024, 2024). The application process for financial assistance and the amount of aid available per household are not

defined by the bill. Additionally, the city shall waive any permit fees required to replace a service line.

Separate from Introduction 942, the DEP currently administers a free residential lead testing program. Upon request, the DEP will send residents a kit with instructions for collecting a drinking water sample, including a pre-paid return label (LeadFreeNYC, 2025).

Crucially, Introduction 942 stipulates that the DEP must replace lead service lines for free if: (1) The DEP is notified that there is a lead service line in a property where a child care program is located; (2) The DEP conducts work on or affecting a property with a lead service line (Int. 0942–2024, 2024).

The bill requires the DEP to establish and engage in outreach and education efforts related to lead service lines. These efforts should target primary stakeholders, including, but not limited to, property owners, child care programs, licensed master plumbers, and contractors specializing in water service line replacement. Resources must be available in English and all ten designated citywide languages, and be posted on the DEP’s website (Int. 0942–2024, 2024).

Enforcement

Owners who fail to replace lead service lines within ten years are liable for a civil penalty up to \$1,000. Owners who fail to obtain and provide certification to the DEP within ten years are liable for a civil penalty up to \$500. Should the city fail to meet its obligations for free service outlined above, the relevant property owner will not be liable for any penalties (Int. 0942–2024, 2024).

Legislative Status

The bill remains “laid over in committee,” with no current amendments or substitute versions posted. Without further action, Introduction 942’s 2024–2025 iteration will effectively expire with the New York City Council legislative reset on January 1, 2026. This will allow legislators to reintroduce a revised bill or propose an alternative bill.

New York State Lead Pipe Replacement Act

At the state level, NY Assembly Bill A7878 (2025) and NY Senate Bill S6892 (2025) are companion bills collectively known as the “Lead Pipe Replacement Act.” Under these bills, covered water systems (such as the DEP) must replace the privately owned portion of lead service lines at no cost to the property owner by 2037. Owners must facilitate the replacement of all portions of the lead service line by providing access to the property and providing any information necessary for the replacement. Property owners can opt out of free replacement and fully replace and certify their service line at their own cost.

The state bills specify that covered water systems may use state and federal grants and loans, proceeds from municipal bonds, water rate revenue, and other types of funding to inspect and replace lead service lines, regardless of the ownership status of the lead service line or the type of property on which it is located. New York State’s Department of Health is authorized to make funding available through the Clean Water Infrastructure Act and the Drinking Water State Revolving Fund.

A7878 and S6892 will be reintroduced in the New York State legislature in 2026 by Assemblywoman Amy Paulin and Senator Gustavo Rivera. Under the doctrine of preemption, should these bills pass, they would control over New York City Council Introduction 942, given the conflict between state and local laws regarding the financially responsible party for lead service line replacement.



POLITICAL ANALYSIS: WHO PAYS?

III. Political Analysis: Who Pays?

There is broad bipartisan support for replacing lead service lines. The Department of Environmental Protection, the New York City Council, property owners, think tanks, environmental justice advocates, and labor unions all agree that lead service lines should be replaced. They disagree, however, on who should pay: the water authority or the property owners? This report's design for a citywide lead service line replacement program begins with an analysis of the bill's supporters and opponents.

Supporters and Cost-Benefit Analysis

Voters across age, race, and political affiliation view clean water investment and lead removal as a nonpartisan public health issue (Russell, 2025). The New York State Department of State's New Lead Rental Registry Law concludes that "every dollar invested in lead-based paint hazard control results in a return of \$25 to \$327" (New York State Department of State, 2024). Similarly, the Natural Resources Defense Council (NRDC) finds that lead water pipe removal would lead to \$42 billion in health care savings in New York (New York State Governor's Office, 2025). The Environmental Protection Agency's cost-benefit analysis for the Lead & Copper Rule Improvement suggests that the projected monetary benefits of lead pipe replacement are higher than the estimated citywide replacement cost of \$2 billion.

Moreover, economists from Harvard University and the Natural Resources Defense Council found that approximately 88% of the health benefits of removing lead pipes come from preventing heart disease in adults. They estimate that removing all 9.2 million lead service lines in the U.S. would yield \$37 billion in annual health savings. That means each removed pipe could save around \$4,000 in healthcare costs each year (Levin, 2023).

There is substantial political support for lead service line replacement among unions. The United Association of Plumbers and Pipefitters supports the Bill and believes lead service line replacement is vital for community safety and for creating skilled plumbing jobs (Harris Water Main & Sewer Contractors, n.d.). The Labourers' International Union of North America (LIUNA) supports robust public investment in water infrastructure and sees large-scale pipe replacement as generating thousands of good union jobs. LIUNA's leadership has called for federal, state, and local governments to fully fund replacement projects and use union labor for consistency, safety, and community benefit (New York City Coalition to End Lead Poisoning, 2024). The International Union of Operating Engineers has similarly advocated for water infrastructure programs that maximize public benefit and workforce opportunity, emphasizing the need for trained operators and coordinated public works projects.

Table 1. EPA Cost-Benefit Analysis on Final Lead and Copper Rule Improvement (EPA, 2024a)

Final LCRI Benefit	Annual Quantified Benefits Once Fully Implemented
Annual ADHD Benefits	\$ 162.7 – \$ 419.6 million
Annual Adult CVD Premature Mortality Benefits	\$ 7.70 – \$ 17.04 billion
Annual IQ Benefits	\$ 5.62 – \$ 7.68 billion
Annual Low-Birth Weight Benefits	\$ 3.9 – \$ 4.4 million

Note: This table shows the quantified health benefits of the final rule. The US EPA expects there are significant additional non-quantified health benefits that are not included but would result in a much greater number of avoided illnesses or deaths once the rule is fully implemented.

Disagreement and Opposition

Despite a broad consensus that lead service lines should be replaced, there is disagreement over who should pay for the replacement.

Since 2021, the DEP has secured \$20 million in federal grants and \$24 million in zero-interest loans through the federal Bipartisan Infrastructure Law (BIL) to improve its water infrastructure. In 2024, the city anticipated receiving another \$72 million, bringing the city’s total to \$120 million (\$50 million in grants and \$70 million in low-interest loans) (Aggarwala, 2024). Over the five years of anticipated BIL funding, the DEP expects to replace approximately 7,300 lead service lines, including 600 lines it has already replaced in low-income communities in the Bronx and Queens (Adams, 2024). Additionally, the city has received \$28 million in state grants to identify and replace lead service lines (Hochul, 2024). Even with these funds, the DEP has concluded that it will never have sufficient resources to cover all private replacements. Given the city’s financial

constraints, DEP Commissioner Aggarwala has questioned whether multimillion-dollar homes with lead service lines should receive a free upgrade at the expense of all ratepayers or taxpayers (Aggarwala, 2024).

Opponents to Introduction 942 object to these arguments on equity grounds. The New York Coalition to End Lead Poisoning (NYCCELP), a group of two dozen advocates that includes the New York League of Conservation Voters Education Fund (NYLCVEF), the Natural Resources Defense Council, Earthjustice, and WE ACT for Environmental Justice, and the Citizens’ Committee for Children of New York, has dubbed Introduction 942 the “Rotten Apple Bill,” arguing that it is “unfair, impractical, and will only delay the replacement of these toxic pipes” (Citizens’ Committee for Children of New York, 2024). These groups believe that shifting the financial and logistical burden to property owners, especially low-income individuals and communities of color, will deepen existing inequalities. NYLCVEF calls on the City Council to reverse course and fund

a city-led, coordinated replacement program because “lead is a legacy pollution issue not

created by any of the current owners or occupants of properties in NYC” (New York League of Conservation Voters, 2024).



Figure 6. Lead members of the New York City Coalition to End Lead Poisoning (NYCCELP) (Cooper Square, 2022)

Many property owners and landlord associations are concerned about the \$10,000–\$15,000 cost of lead service line replacement. They are also apprehensive about the logistical burden of lead service line replacement on homeowners, small landlords, and tenants (Kinniburgh, 2024). For example, although Introduction 942 specifies that fees for lead service line replacements will be waived, it does not address fees for protected streets. The cost to open a protected street in New York City before it is scheduled to be repaired is \$380 (New York City Department of Transportation, 2025). If the fee is not waived, multiple owners could end up paying to dig up the same street multiple times over the next ten years. Instead of a de-centralized approach, these stakeholders advocate for a systematic, publicly funded program, citing successful models in other jurisdictions, such as in Newark, New Jersey, and warning that a piecemeal, privatized strategy will entrench inequity and slow progress.

The American Water Works Association, a utility industry association, described the ten-year timeline as not “feasible” due to existing workforce capacity and disrupted supply chains. As of 2021, there were only 1,151 licensed Master Plumbers in New York City (City of New York, 2021). The DEP has 5,600 employees, with a 13% vacancy rate. Of these, roughly 4,000 employees work in the city (Aggarwala, 2024). The bill does not include provisions for training new Master Plumbers or hiring more DEP employees. Additionally, the United States’ universal 50% tariffs on imports of semi-finished copper products (such as copper pipes) and copper-intensive derivative products (including pipe fittings) complicate sourcing for up to 150,000 new copper service lines. The US currently imports approximately 45% of its copper (Berg, Hernandez-Roy, & Ziemer, 2025).

A photograph showing the back of a woman with dark hair tied back, wearing a grey and black checkered vest over a grey shirt. Next to her is the back of a child with dark hair. In the background, several people have their hands raised in the air, suggesting a group activity or a presentation. The background is slightly blurred, focusing attention on the people in the foreground.

PROGRAM DESIGN: REPLACING LEAD SERVICE LINES IN CHILD CARE CENTERS

IV. Program Design: Replacing Lead Service Lines in Childcare Centers

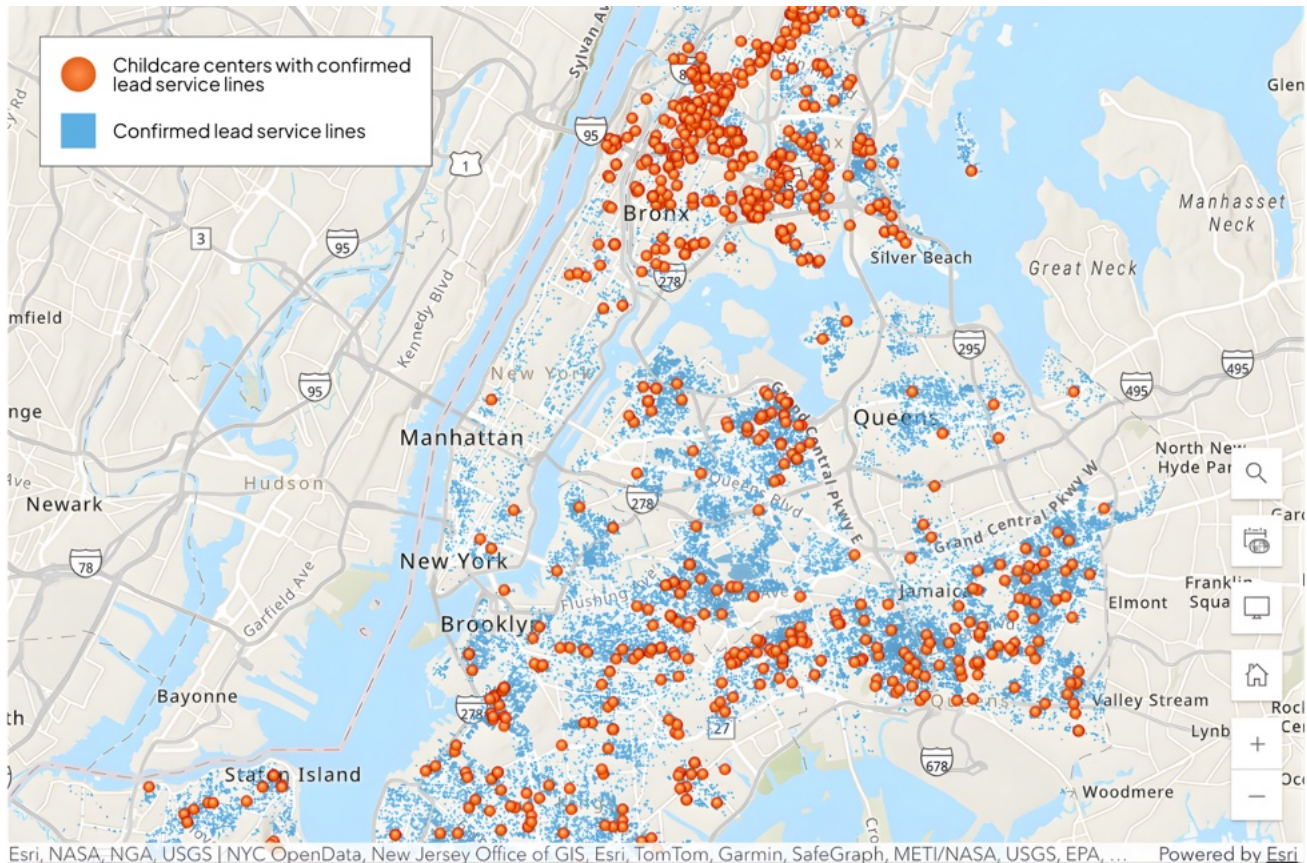


Figure 7. Childcare Facilities with Lead Service Lines Map.

GIS analysis performed by team using ArcGIS Online using the following data sources: Department of Education (2024); Department of Environmental Protection (2025); GIS DCP (2025)

Given the opposition to Introduction 942, this report's proposed design for the DEP's new Lead Pipe Replacement Program focuses on the bill's two least controversial provisions:

§ 24-309.2(c): If a child care program is located on a property and DEP is notified of the presence of a lead service line, DEP must replace the line at no cost.

§ 24-309.2(d): The DEP must develop and distribute informational materials about the bill's replacement and certification requirement, as well as the DEP's financial assistance programs. Target audiences should include: property owners, plumbers, contractors, and child care programs.

Accordingly, the program design for the bill's first year of implementation pursues three goals:

1. Build out the DEP's existing organizational infrastructure for lead pipe replacement.
2. Replace lead service lines at 600 childcare facilities in areas with a high density of lead pipes.
3. Raise citywide awareness via targeted outreach to property owners that can self-fund replacement.

Since the DEP is responsible for the cost of replacement at buildings with child care programs, this approach circumvents the debate over who should bear the cost at other private properties. At the same time, raising citywide awareness of lead service lines might persuade property owners who can self-fund replacement to act promptly and voluntarily. Should the Lead Pipe Replacement Act pass in the New York State Legislature, proactive self-funded replacement by property owners

would reduce the DEP's replacement workload. If the state bills fail to pass, this approach might reduce the number of applicants to the DEP's financial assistance program.

Lead Service Lines at Childcare Facilities

A geospatial analysis using ArcGIS Online found that 808 regulated childcare facilities in New York City are connected to confirmed lead service lines, exposing up to 12,650 children per day to lead-contaminated water. Additionally, there are 746 regulated childcare facilities across the five boroughs with "unknown" service lines, exposing up to 14,945 more children to lead-contaminated water. All in all, as many as 27,595 children attending regulated childcare facilities could be drinking lead-contaminated water. A borough-by-borough analysis of lead service line distribution appears in Appendix F.



pubs.acs.org/est

Article

Strong Association between Children's Elevated Blood Lead Levels and Lead Service Lines: A Census Tract-Level Analysis for Two Midwest Cities

Rogelio Tornero-Velez,* Nicholas Spalt, Timothy Buckley, Antonios G. Poulakos, Stephanie DeFlorio-Barker, Michael Goldberg, Valerie Zartarian, and Lindsay Stanek

Figure 8. A study published on October 21, 2025 in *Environmental Science & Technology* found strong positive correlations between lead service line prevalence and elevated blood lead levels among children served by the Grand Rapids Water System ($r = 0.71$, $p < 0.001$; $n = 195$) and the Greater Cincinnati Water Works ($r = 0.83$, $p < 0.001$; $n = 52$) (Tornero-Velez, et al., 2025).



PROGRAM STAFFING

V. Program Staffing

The New York City Department of Environmental Protection (DEP) is the regulating authority and primary stakeholder responsible for implementing New York City's Lead Service Line Replacement Program and overseeing all performance indicators.

The DEP and the Department of Design and Construction (DDC) already operate pilot programs for lead service line replacement. We recommend building upon this organizational structure by creating a program centered around four operational verticals: Management, Data Collection & Analysis, Communications & Engagement, and Lead Service Line Replacement Operations. The Program Manager, Head of Data, Head of Communications, and Head of Operations will be hired internally from existing DEP staff. The program will consist of 25 staff members and 10 contracted construction and engineering crews.

Program Management

A designated Program Manager (the Deputy Commissioner of Water & Sewer Operations) will supervise the Data, Communications, and Operations Teams. The Program Manager will receive regular updates about the progress and performance from the heads of the Data, Communications, and Operations Teams. The Program Manager will be the final decision-maker for any significant decision that falls outside the jurisdiction of the DEP's other deputy commissioners. They will also serve as the point of contact for

cross-departmental communication and coordination with other agencies, such as the NYC Water Board, New York City Municipal Water Finance Authority, or the DDC. Additionally, they will be responsible for communicating with other DEP officials not directly related to the project, such as the Agency Chief Contracting Officer, Borough Commissioners, or the Deputy Commissioner of Public Affairs & Communications. The Program Manager will report directly to the DEP Commissioner.

Data Team

The Data Team, led by the Head of Data, is responsible for collecting, verifying, and managing information through geographic information systems (GIS). The team's primary responsibility will be to map lead service lines and identify priority areas. The team will consist of two GIS Analysts (internal hires) and a Data Analyst (external hire).

The team's first task will be to clean, verify, and add to the DEP and the New York City Department of Education (NYC DOE)'s existing datasets of lead service lines and regulated child care facilities. The Data Team will continuously update its maps as it receives the results of at-home lead test kits and construction testing. The Data Team will work closely with the DEP's current pipe replacement contractor, CDM Smith, and their digital solutions subcontractor, Trinnex, on establishing a data collection dashboard.

The Data Team will help the Communications Team identify childcare facilities that are eligible for lead service line replacement. The teams will also identify neighborhoods to target for advertisements about self-funded service line replacement.

Communications Team

The Communications Team, led by the Head of Communications, will handle public engagement, conduct training sessions, develop multilingual educational materials, and build trust with local communities. The team will consist of two branches: Public Relations and Community Engagement. The Public Relations branch will include a Public Relations Manager and a Graphic Designer (both internal hires). The Community Engagement branch will consist of a Community Engagement Manager (external hire) who oversees five community liaisons (external hires), each responsible for a borough, and five educators (external hires).

The Public Relations branch's responsibilities include developing informational materials for the DEP's lead service line website; creating advertising campaigns to target potential self-funding households; and communicating the program's success to the public. The Community Engagement branch's responsibilities include contacting eligible childcare centers and coordinating replacements; designing and facilitating informational sessions (both in-person and virtual) for targeted childcare center directors and staff; and engaging with parents before and after construction to address any community concerns or questions.

Operations Team

The Operations Team, led by the Head of Operations, will coordinate contractors, manage field logistics, and ensure efficient replacements. Five internally hired DEP employees will act as project managers, overseeing specific segments of all field teams and reporting on their progress. These project managers will be responsible for obtaining any necessary permits, which will enable crews to transition from one site to the next without delay. They will work with the Communications Team to coordinate replacement with childcare centers. They will also notify the Data Team of removed pipes, so that they can maintain an accurate inventory of lead service lines in the city.

The five project managers will oversee ten construction crews contracted by the DEP in accordance with standard DEP contracting procedures. Crews are generally composed of a foreperson, operators for heavy machinery, and ground laborers. While crew sizes range depending on the scope of the project, site conditions, and technical needs, a recent city-wide service line replacement program run by Louisville Water Co., in Louisville, Kentucky, averaged crew sizes of three to five workers (Smith et al., 2020)

The program's first year will benefit from an established contract between the DEP and CDM Smith, a construction and engineering firm. In May 2024, DEP selected CDM Smith to lead the initial phase of its service line pilot program under an \$8.6 million, three-year contract. To enhance technical capacity, CDM Smith subcontracted with Trinnex, leveraging their LeadCAST software platform for inventory tracking, project management, and

reporting (CDM Smith, 2024). By utilizing this preexisting contract, the time-consuming tasks of issuing a request for proposal and selecting a vendor can be avoided. This will expedite the start of operations and enable

service line replacement to begin immediately once the Data and Communications Teams identify and notify the first recipients of this service.

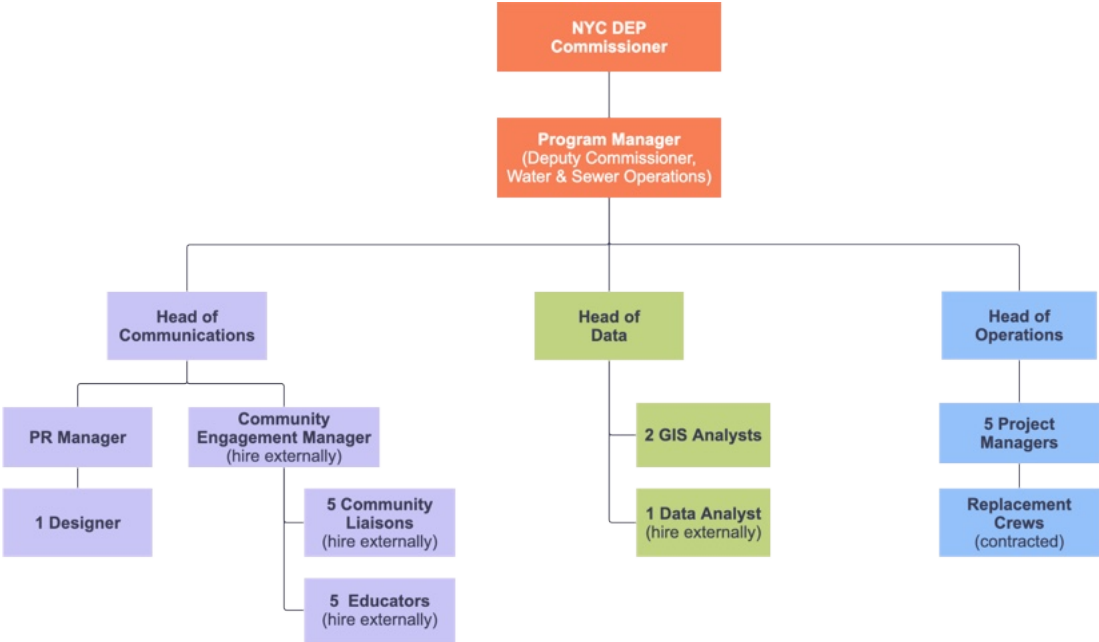


Figure 9. Proposed Organizational Flow Chart for the Department of Environmental Protection’s new Lead Service Line Replacement Program

Our proposed program’s organizational design uses a mix of internal DEP staff and external hires to enable the program to begin quickly and run smoothly. Internal hires are familiar with DEP protocols, so they can make decisions, coordinate across departments, and keep the program consistent with city rules. External hires fill gaps when the DEP lacks sufficient staff or needs specialized skills, such as language proficiency, data analysis, graphic design, or strategic communications. The staffing plan builds on the DEP’s vacancies, begins with internal hires, and utilizes external hires to scale the program (NYC Comptroller, 2025).

The program also benefits from the DEP’s existing contract with CDM Smith and Trinnex. This partnership supports fast scheduling, organized construction work, and transparent reporting. Our program draws from Newark’s successful lead service line remediation program, which CDM Smith oversaw, and adheres to federal guidance on effective lead pipe replacement (CDM Smith, n.d.-a). A detailed organizational workflow and hiring breakdown appears in Appendix B.



PERFORMANCE INDICATORS

VI. Performance Indicators

The performance management system for this proposed Lead Service Line Replacement Program tracks four indicators: Inputs, Work Processes, Outputs, and Impacts.

Inputs

Input measurements examine whether the program has the staff, funding, and information, including a GIS-based map of childcare facilities, needed to reach its target. Staffing and budget are reviewed quarterly against the approved Personnel Services and

Other Than Personnel Services allocations. These reviews will inform adjustments to hiring, procurement, and work sequencing as the DEP optimizes the program.

A GIS-based inventory of childcare facilities and service line status is maintained and updated throughout the year. It is used to guide outreach and construction, reduce uncertainty about remaining lead service lines, and provide a clear record of progress. This information should be publicly available.

Table 1. Input Metrics for Lead Service Line Replacement Program

Metric	Progress Tracking	Reporting
Program Staffing and Budget Allocation		
Total approved budget broken down	Quarterly monitoring	Program Manager to DEP Commissioner
Number of staff secured and active key roles	Quarterly review	
Geographic information system (GIS) Map Completion		
Number of childcare facilities identified and confirmed	Continuous tracking until end of Q4	GIS Analysts to Head of Data, Communication, and Operations Depts.

Work Processes

Work process measurements evaluate how efficiently and reliably the replacement workflow operates in the field. The performance and quality indicator tracks time to complete replacements, average days per job, rework or error rates, and time required for surface restoration. Regular monitoring,

beginning in the second quarter, allows the DEP and its contractors to identify bottlenecks and quality issues. Similarly, it enables the the DEP to identify when and why benchmarks are exceeded. In both cases, these indicators enable the DEP to adjust its workflows, materials, or staffing patterns to keep work on schedule and limit disruption around childcare facilities

Table 2. Work Processes Metrics for Lead Service Line Replacement Program

Metric	Progress Tracking	Reporting
Replacement Process Performance and Quality		
Average days to complete each replacement	Monthly tracking and quarterly review	Contractors to Operations Department
Time to complete pipe replacements		
Error rate in construction (rework rate)		
Time to complete surface restoration post-replacements		

Outputs

Output measurements record the immediate, and quantifiable results of the program's operations and engagement. Operational indicators track the number of replaced service lines, recycled lead pipes, completed surface restorations, and privately funded replacements. These indicators are reviewed monthly and quarterly to check whether the

program is on pace, ensure disposals are verified, and respond to any restoration backlogs or low private uptake. A community engagement indicator records meetings and workshops, household notifications, media efforts, and distributed follow-up water testing kits and point-of-use filters. This indicator links fieldwork to community engagement and risk mitigation resources that will be provided to residents.

Table 3. Output Metrics for Lead Service Line Replacement Program

Metric	Progress Tracking	Reporting
Lead Service Line Replacement Operations		
Number of lead service lines replaced	Monthly tracking and quarterly review	Contractor to Operations Department
Number of lead pipes disposed of at recycling centers		
Number of surface restoration post-replacement completed		
Number of pipes replaced privately		Communication Dept. to Program Manager

Table 4. Additional Output Metrics for Lead Service Line Replacement Program

Metric	Progress Tracking	Reporting
Community Engagement and Participation		
Number of community meetings/workshops completed	Monthly tracking by Communication Department and quarterly review	Communication Department to Program Manager
Number of households informed prior to replacement		
Amounts of media coverage		
Number of lead testing kits distributed		
Number of point-of-use (PoU) filters distributed		

Impacts

Impact measurements focus on whether the program improves environmental conditons, health outcomes, and public trust. Tap water sampling before and after replacement is used to confirm reductions in lead concentrations, while annual health data for children under six tracks trends in blood lead levels (BLL) following replacements and interim protections. Metrics for public awareness and trust include the number of people removed from harm's way and the number of privately funded replacements, which signal understanding of the hazard and confidence in the program.

Where expected improvements in water quality, blood lead levels, or private replacement rates do not appear, the program is expected to reassess plumbing conditions, communication strategies, and competing priorities. It is also expected to coordinate more closely with housing agencies and public health partners.

Performance data will be compiled and visualized through Trinnex's internal dashboards, GIS spatial maps, and quarterly progress reports to DEP leadership and partner agencies. This system will facilitate transparent monitoring, early identification of challenges, and targeted corrective actions.

Table 5. Impact Metrics for Lead Service Line Replacement Program

Metric	Progress Tracking	Reporting
Lead Levels in Drinking Water (WLL)		
Reduction in water lead levels (WLL) in drinking water	Continuous tracking and quarterly review	Communication Department to Program Manager
Blood Lead Levels (BLL)		
Reduction in blood lead levels (BLL) in children (<6 years)	Continuous tracking and quarterly review	Communication Department to Program Manager
Public Awareness and Confidence		
Number of people removed from harm's way by DEP (both under 6 and over 6)	Continuous tracking and quarterly review	Communication Department to Program Manager
Number of people who privately replace their lead service line		

The indicators across Inputs (resources and preparatory activities), Work Processes (program activities), Outputs (delivery and engagement), and Impacts (water quality, children's blood lead levels, and public confidence) provide a thorough and auditable view of implementation throughout Year 1. This system aims to track progress, ensure accountability, and create a feedback loop for continuous improvement.

Monthly reporting from each Team Head to the Program Manager, along with quarterly reporting from the Program Manager to the DEP Commissioner and other relevant government agencies, will support effective adjustments, transparent communication, and the collection of evidence needed to scale the pilot year into a fully operational ten-year citywide program.

This performance management system seeks to demonstrate the program's viability as the DEP replaces up to 600 lead service lines at childcare facilities, establishes a repeatable workflow, and gathers data to inform a ten-year city-wide rollout. A detailed breakdown of performance management indicators appears in Appendix D.



BUDGET PLAN

VII. Budget Plan

The projected total Year 1 budget for implementing NYC Council Introduction 942 is \$8,638,379. Of this amount, \$1,980,103 (23%) is allocated to Personnel Services (PS), and \$6,658,276 (77%) to Other-Than-Personnel Services (OTPS). Funding sources include the DEP's capital budget, Municipal Water Finance Authority bonds, and federal and state programs such as the Bipartisan Infrastructure Law (BIL) and the Drinking Water State Revolving Fund (DWSRF).

Personnel Services covers salaries and benefits for key leadership positions, including the Program Manager, Department

Heads, GIS Analysts, Public Relations Manager, Project Managers, and Community Engagement and Education Specialists. The Other-Than-Personnel Services category encompasses contractor payments, community outreach activities, public education and advertising, equipment, lead testing kits, and communication materials. The Year 1 budget is designed to support the childcare facility pilot program, which will aim to replace 600 lead service lines by the end of 2026. This pilot phase will establish the operational, technical, and financial model for the ten-year citywide rollout.

Table 6. Program Budget Summary

Program Budget Summary		
Other Than Personnel Service (OTPS)		
Category	Sub-Category	Total (\$)
Key Leadership	Meetings, supplies, stipends	\$ 10,600.00
Data & Hardware	Laptops, SSDs, adapters	\$ 5,880.00
Communication & Outreach	Printing, materials, outreach	\$ 193,446.00
Public Relations	Media, advertising, engagement	\$ 838,600.00
Contractor Fee	External contractor support	\$ 3,930,800.00
Operation Materials	Vehicles, filters, waste handling, gaps, temp water	\$ 1,678,950.00
TOTAL OTPS		\$ 6,658,276.00
Labor Budget Summary		
Category	Sub-Category	Total (\$)
Management	Program + Department Leadership	\$ 640,228.00
Data Department	GIS + Data Analysts	\$ 198,000.00
Public Relations	PR + Designer + Educators	\$ 708,750.00
Operation Department	Project Managers	\$ 433,125.00
TOTAL LABOR		\$ 1,980,103.00
Budget Summary		
TOTAL	OTPS + Labor	\$ 8,638,379.00

These budget estimates account for inflation, labor cost fluctuations, and potential regulatory delays. Salaries for internal hires are based on the DEP and New York City Department of Citywide Administrative Services pay bands. 35% fringe benefit rates include healthcare, pension, and payroll taxes. A detailed budget appears in Appendix C.

This financial plan aligns staffing and operational needs with funding availability to ensure a transparent, data-driven approach. By connecting the program’s goals with realistic fiscal management, this budget serves as a roadmap for the DEP and partner agencies to scale the Lead Service Line Replacement Program over the next decade.

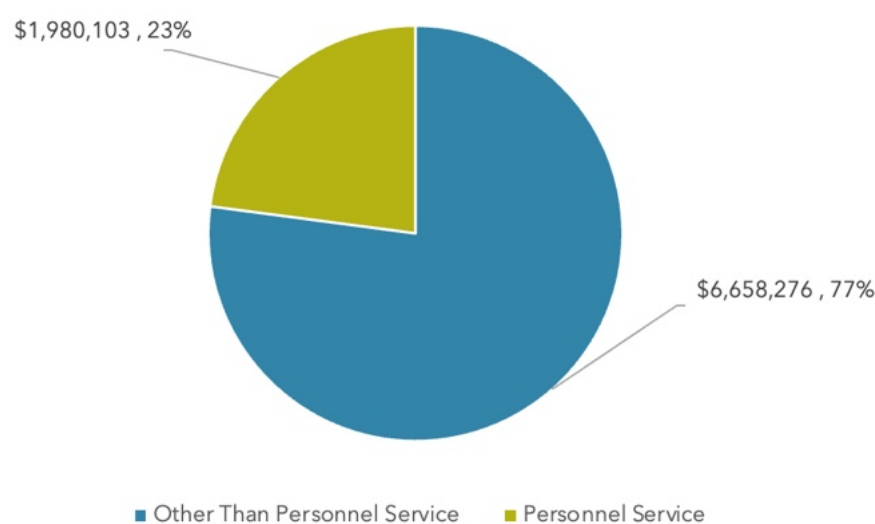


Figure 10. Overall Budget Breakdown for Year 1

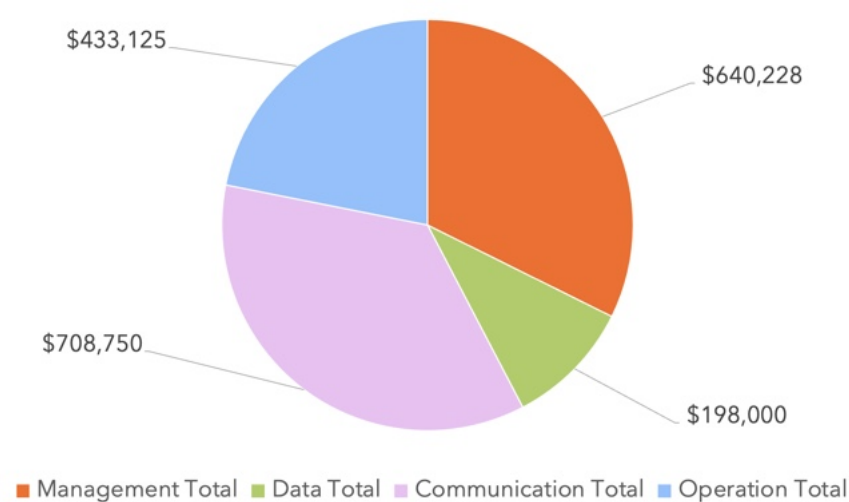


Figure 11. Personnel Service Breakdown for Year 1 Budget



MASTER CALENDAR FOR YEAR 1

VIII. Master Calendar for Year 1

The proposed master calendar for Year 1 provides a clear sequence of actions for the Department of Environmental Protection (DEP) to implement the Lead Service Line Replacement Program in its first year. The program's Year 1 goals are:

1. Replace lead service lines at 600 childcare facilities in areas with a high density of lead pipes.
2. Build citywide awareness of lead service lines, with targeted outreach to households that have the ability to self-fund their replacement.

The 600-pipe goal is based on DEP's demonstrated capacity to replace lead pipes through its successful pilot program completed in 2022 (City of New York, 2024).

The program's Year 1 activities are organized into three stages:

1. Organizational Set-Up
2. Planning
3. Implementation

A continuous review and reporting process runs across all stages. Together, these actions establish governance and staffing, finalize cross-team workflows, and drive fieldwork at childcare facilities and public engagement across New York City. Year 1 is designed to set a strong foundation for the subsequent ten-year citywide replacement plan. Detailed task lists, persons in charge, and month-by-month timelines appear in Appendix E.

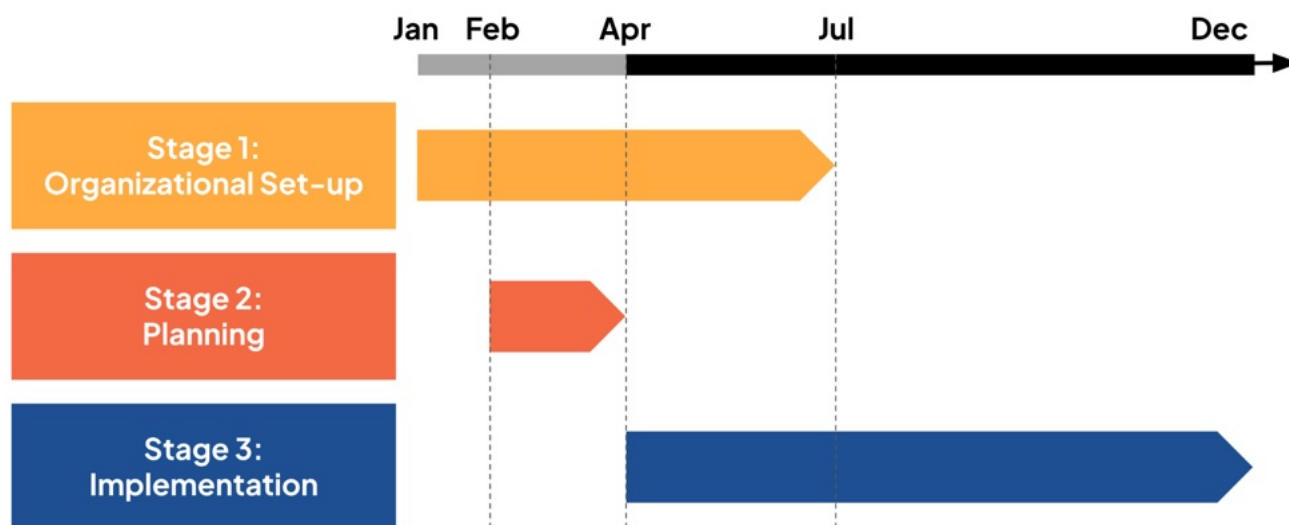


Figure 12. Year 1 Program Implementation Timeline

Stage 1: Organizational Set-Up

Stage 1, which runs from January to June 2026, establishes the new program's operational backbone. The program's leadership teams will confirm funding sources and budget allocation, finalize roles and responsibilities, recruit and onboard internal and external hires, and pre-mobilize with existing contractors (CDM Smith and Trinnex) by clearing all pre-start work requirements. Additionally, each department will finalize its high-level plan, such as cadence, persons in charge, and key performance indicators.

Except for hiring, all other readiness items will be completed in the first quarter to support an April start for replacements. The initial team should be fully operational by the end of the first quarter; all program staff will be in place by the second quarter, with some hires in the Communications Team phased in closer to the rollout of education and engagement events.

Stage 2: Planning

Stage 2, which runs from February to March, focuses on pre-rollout planning and preparation. The Data Team will complete the GIS mapping of childcare facilities in areas with high lead service line density, identify properties likely to self-fund replacement, and develop an internal Trinnex dashboard for performance management. The Data Team will also develop an informational website for the public covering testing information, a database of licensed master plumbers, flushing instructions, and replacement related resources. The Communications Team will prepare outreach and public education materials and design advertising for multiple channels (subway, television, radio, and social

media). The Operations Team will build the replacement schedule and acquire all construction and entry permits to begin field work. Stage 2 concludes with data products, communication materials, and operational readiness in place, removing friction at launch and keeping field crews productive.

Stage 3: Implementation

Stage 3 marks the start of the implementation period, which runs from April to December. For the goal of replacing lead service lines at childcare facilities, the Communications Team will inform and educate childcare facilities, parents, and property managers in advance of field work. The Operations Team will replace pipes, restore streets or sidewalks, and collect pre- and post-replacement water samples for lab analysis. The Data Team will continuously update the internal dashboard, the GIS maps, and the public information website with new field and home test results.

The construction cadence is as follows: Ten construction crews will be deployed, each working approximately 3 days per site, consistent with the industry standard of 2–3 days per trenchless pull-through replacement (CDM Smith, n.d.-b). Over the nine-month window, these crews are expected to replace about 80 service lines per month, totaling roughly 720 replacements annually. With a 10% buffer for holidays, bad weather, and utility conflicts, we expect to complete around 650 replacements, exceeding the Year 1 target of 600.

In parallel, for the goal of increasing citywide awareness, the DEP will launch its educational campaign. The Communications Team will distribute the prepared advertising, conduct

in person and virtual public education sessions, and respond to real-time inquiries. It will also encourage households that are able to self-fund replacement (e.g., high-income families or households with children) to request test kits and proceed with replacements.

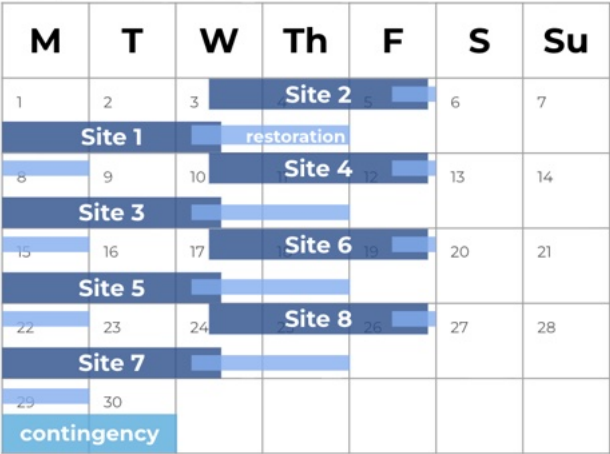


Figure 13. Monthly cadence for construction crews, demonstrating capacity to replace up to 8 service lines per crew each month.

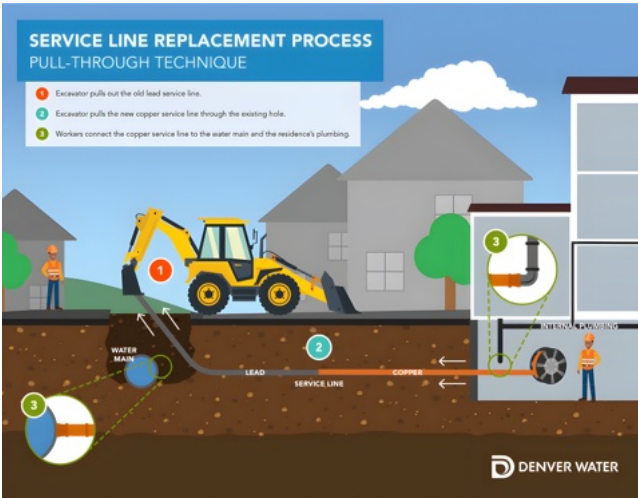


Figure 14. Schematic showing the trenchless pull-through technique used for lead service line replacement (Denver Water, 2020)

Review & Reporting

Aligned with the performance management system described in Section VI of this report, the program will conduct monthly internal reviews to assess performance, address any operational delays, and ensure continued alignment with public health and environmental equity objectives. The leadership team will also hold quarterly review meetings with the DEP Commissioner and submit a quarterly formal report. The Communications Team will issue press releases and host public briefings each quarter to promote transparency and sustain citywide awareness.

This master calendar emphasizes frequent coordination and communication across Leadership, Data, Communications, and Operations departments. Through disciplined scheduling, regular review of cadences, and closed-loop feedback, the DEP will monitor progress, proactively identify challenges, and execute course-corrections without delay. Together, these practices will establish a strong workflow and performance measurement system for the ten-year citywide replacement plan.

As the public becomes educated, demand for water testing and service line replacement is expected to increase rapidly. Just last year, requests for resident tests surged to nearly 9,000, up from less than 5,000 the year prior (Walsh, 2025). With careful preparation, disciplined management, and consistent measurement, the DEP will be well-positioned to meet this growing demand while maintaining program quality and pace.

A photograph of two young children sitting at a table, drinking from clear plastic cups. The child on the right is in the foreground, holding the cup to their mouth. The child on the left is slightly behind and to the side, also drinking. On the table in front of them are plates of food, including a salad with tomatoes and green vegetables, and a plate with a mound of white rice. The background is a plain, light-colored wall. The entire image is overlaid with a semi-transparent dark grey filter.

MITIGATING LEAD EXPOSURE RISK

IX. Mitigating Lead Exposure Risk

Although the lead service line replacement process is ultimately beneficial, it can pose short-term health risks to workers and residents during and after construction.

Construction Exposure Risk

Some studies of lead service-line replacement consistently find that cutting, pulling, or otherwise disturbing legacy pipe generates respirable dust and resuspends contaminated soil. Both of these media readily transfer from clothing, boots, and tools to workers' homes, placing family members, especially children, at secondary risk. Even a single day of replacement work can elevate blood-lead levels (BLLs) to 5–6 µg/dL, a range already linked to neuro-behavioral deficits and peripheral neuropathy (NIOSH, 2011). Thus, the National Institute for Occupational Safety and Health recognizes that personal protective equipment is vital for worker safety during lead pipe replacement.

Residential Exposure Risk

When old service lines are disturbed or removed, accumulated lead scale and particles that have built up inside pipes over decades can break loose and enter household water supplies. This disturbance can cause lead levels to spike dramatically, with elevated concentrations persisting for weeks or even months after replacement. The Centers for Disease Control (CDC) warns that children living in homes undergoing pipe

replacement face heightened exposure risks due to the spike in lead concentrations in tap water, with documented cases of elevated blood lead levels during and after construction (Renner, 2010). With full service line replacement, however, lead levels drop by more than 50% within 3 days and continue declining thereafter (Trueman et al., 2016).

Beyond waterborne exposure, the construction process generates airborne lead hazards that can affect residents. Lead dust is released during excavation and pipe-cutting operations, with risks particularly acute in confined spaces, where ventilation is limited. This airborne lead can spread indoors, settling on surfaces and in carpets where it poses ongoing exposure risks, especially for young children who play on floors and frequently put their hands in their mouths. Without proper containment protocols, this contamination can persist long after construction ends, creating a secondary exposure pathway that extends the health risks beyond the replacement period.

Exposure Mitigation Pre-Replacement

Until service lines are replaced, residents can further mitigate their lead exposure by running the tap for 30 to 60 seconds, or until the water gets cold. Colder water indicates that the water sitting in pipes overnight, more likely to contain contaminants due to prolonged pipe exposure, has been flushed. Residents should also use cold water for cooking, drinking, or

preparing infant formula. Hot tap water is more likely to contain lead and other metals. Additionally, the United States Environmental Protection Agency (EPA) recommends that

residents clean their faucet screens (aerators) monthly. Any installed water filters should also be cleaned and replaced monthly.

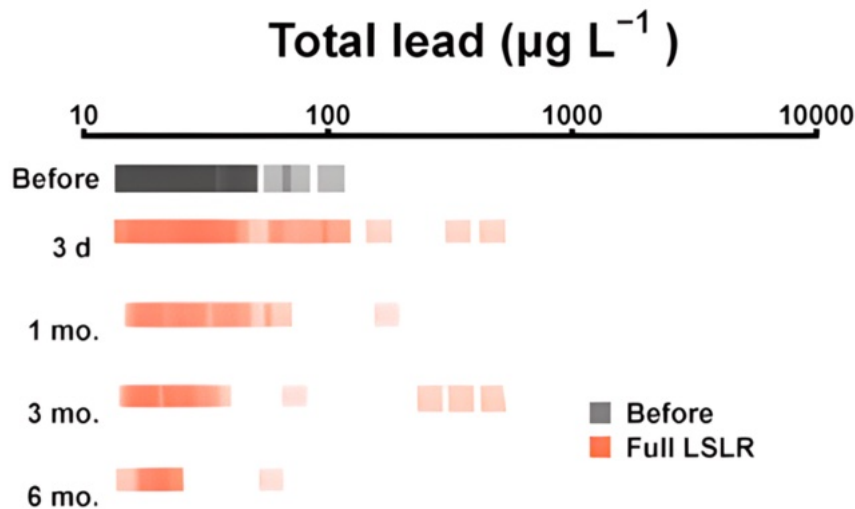


Figure 15. Total lead concentration pre- and post-replacement (Trueman et al., 2016)

Exposure Mitigation Post-Replacement

The DEP currently provides free pitcher filters and replacement cartridges to eligible households immediately after replacement, recommending their use for at least 6 months as a safeguard. The effectiveness of these filters varies. While faucet-mounted filters certified to NSF/ANSI Standard 53 can reduce lead concentrations to below 1 µg/L, pitcher filters show much more variable performance. Studies indicate pitcher filters reduce lead concentrations by only 55% to 90%, with effectiveness depending on water quality conditions, filter maintenance, and the specific type of lead particles present in the water (Doré et al., 2021). In addition to using a pitcher filter, the DEP also advises residents to flush all household taps for at least 30 minutes after service line replacement.

Exposure Mitigation for Unremediated Properties

Given the number of confirmed lead service lines in the city, the bill’s ten-year timeframe, and the DEP’s current backlog in processing applications for free lead testing kits, temporary solutions will be necessary to mitigate lead exposure at child care facilities that will not be covered during the program’s first year. In addition to flushing their water pipes, property owners and childcare center directors might need to purchase water filters certified by the National Sanitation Foundation or UL Solutions. Lead filters can be handheld pitchers, faucet-mounted, or installed under a sink. (EPA, 2024). Pitchers and sink filters range from \$20 to \$130, with replacement filters costing between \$5 and \$25 (Watsky & Adams, 2025).

A close-up, black and white photograph of a faucet. The faucet is metallic and has a single drop of water falling from its spout. The background is dark and out of focus.

FUTURE RECOMMENDATIONS

X. Future Recommendations

This report details the proposed Year 1 program design, staffing plan, budget, and master calendar for the DEP's new Lead Service Line Replacement Program under Introduction 942. This program aims to replace lead service lines at 600 childcare centers, removing an estimated 9,394 children from harm's way. The program also aims to create new organizational structures and information systems to guide targeted replacements, outreach, and collaboration with key stakeholders. The goal is to educate the public so that those with means can self-fund their lead service line replacement programs and those without means can proactively mitigate their risk. Looking ahead, recommendations beyond 2026 include:

Replace Remaining Lead Service Lines at Childcare Facilities

At the close of 2026, 208 child care facilities will still have lead service lines. The program's second year should prioritize replacing these lines. This will protect another estimated 3,256 children from lead water poisoning. Additionally, the program should test the 746 child care programs with unknown service lines to determine the DEP's next targets.

Attention should be paid to lead service lines at daycares, given the risk of adding lead-contaminated water to baby powder formula (Misdary, 2024). To maximize efficiency, future replacements should be coordinated with the Department of Transportation's schedule for road repairs.

Develop a Department of Housing Preservation & Development Indicator for Mitigated Properties

While the Department of Housing Preservation and Development's (HPD) current enforcement and repair indicators (e.g., Class C violations certified as corrected, units abated for lead) effectively track remediation of lead-based paint and other immediate housing hazards, they do not capture potential lead exposure risks from lead plumbing. Considering the city's broader public health and housing safety goals, it is recommended that HPD, in coordination with the DEP, add a complementary indicator that tracks "residential units mitigated for lead in drinking water." Aligning housing and water safety metrics would strengthen citywide lead hazard reduction reporting, ensure consistent protection for residents across environmental pathways (e.g. paint, water, dust), and improve coordination between HPD's Office of Enforcement and the DEP's Lead Service Line Replacement Program.

Launch a Public Health Study to Track BLL and WLL

The DEP should launch a public health study, potentially conducted by Columbia University's Mailman School of Public Health, to measure child blood lead levels (BLL) and water lead levels (WLL) in remediated areas. The goal will be to assess trends over time, identify priority areas for intervention, and

refine evaluation methods (e.g. sampling strategy, review cadence, and outcome metrics). Since blood levels are not routinely collected from children until age three, this will help policymakers and public health officials better track the program’s progress.

Partner with a Filtration Company

Newark, New Jersey, once called an “echo of Flint, Michigan” recently replaced all of its lead service lines. The city partnered with PUR to distribute 38,000 filters to residents with lead pipes (Thomas, 2019). Similarly, Denver, Colorado, partnered with BRITA to distribute over 100,000 pitchers with filters to households with suspected lead service lines, along with a new filter every six months until six months after the service line was replaced (BRITA, n.d.). The DEP should pursue a similar public-private partnership to provide pitchers and replacement filters to households with confirmed or unknown lead service lines.

Develop a Coordinated Lead Recycling Program

Lead pipes easily melt due to their purity, in contrast with complex materials, which require full smelting, a more expensive and extensive process (Thornton et al., 2001). This

economic incentive makes lead one of the most effectively recycled materials, with more lead now produced through recycling than mining. Lead recycling could be a source of revenue for the city, and the DEP should incorporate lead pipe recycling into its pipe-replacement workflow.

A regulated pathway determines the fate of removed lead pipes (NYLCVEF, 2024). After temporary storage in secure containers at work sites, pipes are transported to facilities authorized to either recycle scrap metal or manage hazardous waste (DEP, n.d.; New York State Department of Environmental Conservation, n.d.; EPA, 2024b).

The decision to recycle or dispose of discarded lead pipes depends on Toxicity Characteristic Leaching Procedure (TCLP) testing, which determines if lead leaching exceeds the regulatory limit of 5.0 mg/L, and therefore, must be handled as hazardous waste under the Resource Conservation and Recovery Act. If TCLP results fall below this threshold, the pipes can be classified as non-hazardous and sent to recycling facilities, where the lead is processed for reuse in industrial applications.



Figure 16. Lead Service Line Recycling Process Flow Diagram

A close-up photograph of a person's hand using a pair of red-handled pliers to work on a chrome faucet assembly. The faucet is mounted on a white tiled wall. The word "CONCLUSION" is overlaid in large, white, bold, sans-serif capital letters across the center of the image.

CONCLUSION

XI. Conclusion

This report proposes a new Lead Service Line Replacement Program, managed by the New York City Department of Environmental Protection, to implement Introduction 942. The program's first-year goal is to protect children from drinking lead-contaminated water. Replacing at least 600 lead service lines at buildings with childcare programs in areas with a high density of lead service lines will eliminate routine lead exposure for an estimated 9,394 children under age six. Given that most children spend a majority of their waking hours at childcare facilities or schools, tackling these service lines is critical to reducing their overall risk. Since most child care facilities are in commercial or residential buildings, these replacements could also eliminate the exposure route for adult residents in the same buildings.

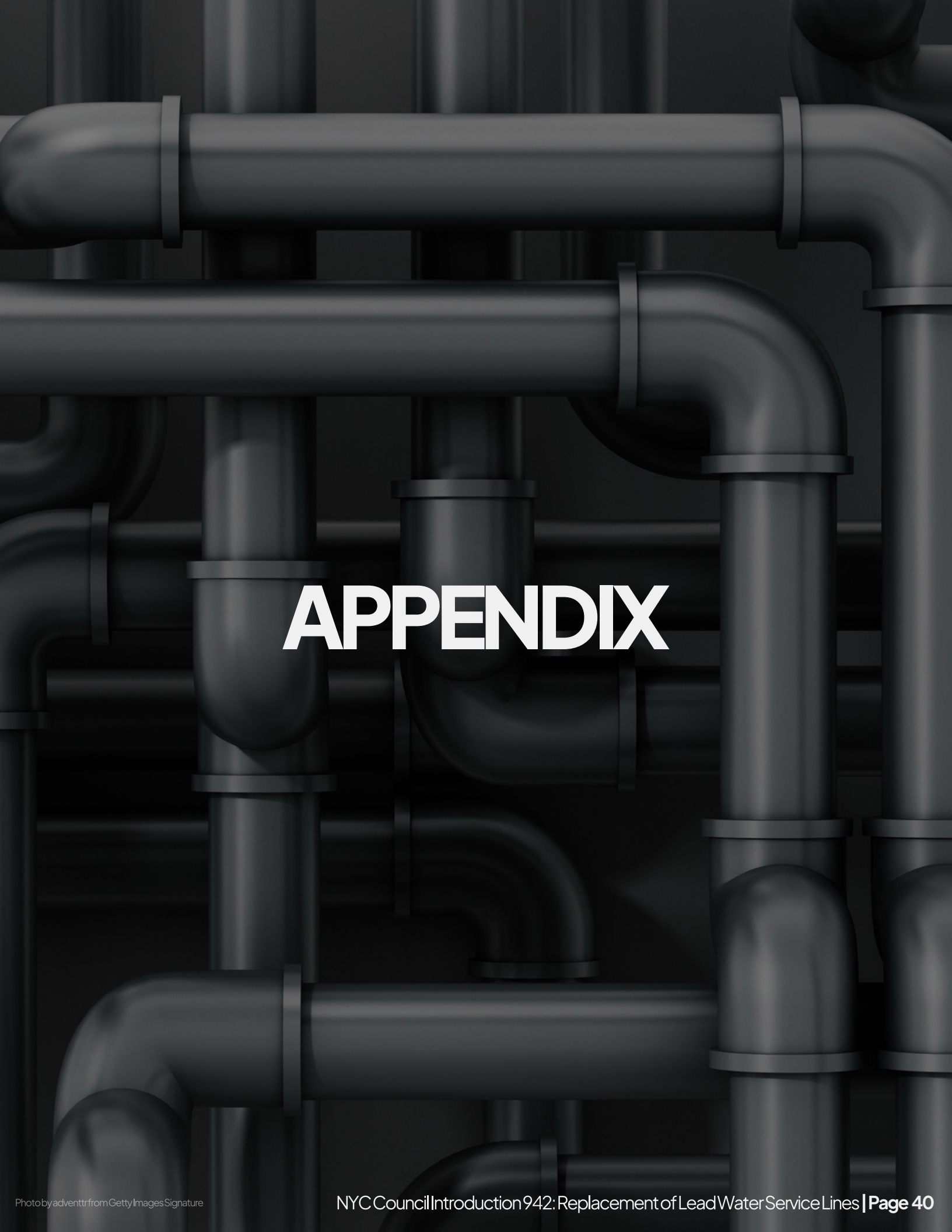
By rolling out an aggressive public education campaign alongside its lead service line replacement operations, the DEP will empower community members to take action, either by implementing mitigation strategies or by self-funding replacement. Encouraging self-funded replacement will increase the number of service lines replaced during the program's first year. Educating the public about filters and flushing will prevent unnecessary panic and help steer residents away from bottled water, which can contain microplastics (Walsh, 2025).

Lastly, the program's first year will allow the DEP to establish new information systems to collect, analyze, and share data. These

systems will guide targeted lead service line replacements and outreach beyond 2026. It will also position the DEP to collaborate with key stakeholders in the future, such as Columbia University's Mailman School of Public Health, to conduct an exposure study, or the NYC Department of Housing Preservation and Development, to develop a housing indicator for lead in drinking water.

This first year implementation plan for Introduction 942 represents a crucial step towards mitigating exposure to lead, a neurotoxic heavy metal that can severely impact the health and development of children and adults. Although 600 service lines represent only a fraction of all the lead service lines in the city, these first replacements benefit our youngest and most vulnerable New Yorkers—the city's future.

Thanks to careful planning and decades of investment in the watershed, New York City boasts some of the cleanest and “best tasting” drinking water on earth (Rahmanan, 2025). Each lead service line reduces our return on investment by polluting the city's fresh water just before it reaches the tap (Misdary, 2024). If successfully implemented, this proposed Lead Service Line Replacement Program will ensure that children drink the same pristine water that flows from the Catskills. Only then can we look our children in the eye and tell them that New York City water is the “safest and healthiest drink for New Yorkers” (DEP, 2016).



APPENDIX

Appendix A | Legislative Summary

Bill Name: New York City Council Int. 942–2024: Replacement of Lead Water Service Lines.

Sponsor: Council Member James F. Gennaro.

Main Requirement: All property owners, other than the City of New York, must replace any lead water service line with copper or another approved material and submit proof from a licensed master plumber within 10 years of the law’s effective start date.

Effective Date: 180 days after enactment.

Agency in Charge: NYC Department of Environmental Protection (DEP), which manages testing, financial aid, waives permit fees, and oversees enforcement.

Section-by-section Summary:

§ 24–309.2(a): Definitions

- **Area Median Income:** Income limits set annually by the U.S. Department of Housing and Urban Development for the New York, NY HUD Metropolitan Fair Market Rent Area.
- **Child Care Program:** Regular care for children under 12 years, less than 24 hours per day, by non-relatives.
- **Commissioner:** Commissioner of the NYC Department of Environmental Protection.
- **Department (DEP):** NYC Department of Environmental Protection.
- **Licensed Master Plumber:** A person holding a current master plumber license issued by the NYC Department of Buildings or someone working under their direct supervision.
- **Property Owner:** Any individual, LLC, or other entity that owns real property in NYC, excluding the City of New York.

§ 24–309.2(b): Replacement and Certification Requirement

- **(b)(1):** All property owners (except the City of New York) must replace lead water service lines with copper or approved alternatives within 10 years of the law’s effective date.
- **(b)(2):** Within the bill’s 10-year period, property owners must obtain and submit to the Commissioner a certification from a licensed master plumber that no lead water service line exists on their property.

§ 24–309.2(c): City Assistance Mechanisms

- **(c)(1):** DEP must provide free testing of water service lines to property owners upon request.
- **(c)(2):** DEP must establish a financial assistance program (subject to funding) for owners earning $\leq 50\%$ of Area Median Income.

- **(c)(3)**: All permit fees related to replacement work should be waived.
- **(c)(4)**: If DEP works on or affects a lead service line of a property, the DEP must replace the service line at no cost to the property owner.
- **(c)(5)**: If a child care program is located on a property and DEP is notified of the presence of a lead service line, DEP must replace the line at no cost.

§ 24–309.2(d): Outreach and Education

- **(d)(1)**: DEP must develop and distribute informational materials about the replacement and certification requirement and assistance programs, targeting property owners, plumbers, contractors, and child care programs.
- **(d)(2)**: Materials must be provided in English and designated citywide languages and be available on the DEP website.

§ 24–309.2(e): Enforcement

- **(e)(1)**: Failure to replace lead service lines within the stipulated time frame attracts a civil penalty of up to \$1,000.
- **(e)(2)**: Failure to obtain certification within the stipulated time frame attracts a civil penalty of up to \$500.
- **(e)(3)**: If DEP fails to replace the service line (when required under (c)(4) or (c)(5)), the owner is not liable for penalties.

§ 2: Effective Date

- The law takes effect 180 days after enactment.

Appendix B | Organizational Workflow and Staffing Structure

Overall Organizational Workflow

The program's workflow will proceed as follows:

- **Identification:** Locate childcare facilities in “hotspots” of LSLs - Data Team
- **Outreach:** Direct property owner notifications, public education campaigns, and partnering with local community organizations - Communications Team
- **Coordination:** working with the Office of Children and Family Services for relaying the necessary information for parents to have alternatives for childcare while operations team is on site - Communications Team
- **Inspection & Verification:** On-site verification of service line material from meter to main; updating GIS and leadCAST inventory systems - Operations Team
- **Permitting & Utility Coordination:** DOT street opening permits, traffic planning, and utility mark-outs to protect existing infrastructure - Communications Team
- **Excavation & Pipe Removal:** Safe excavation, removal, and containment of lead/galvanized lines following CDC guidance - Operations Team
- **Replacement & Connection:** Install lead-free service line, reconnect household service line, test pressure, and turn water back on - Operations Team
- **Site Restoration:** Full restoration of pavement, sidewalks, and landscaping within 2–4 weeks of construction - Operations Team
- **Post-Replacement Support:** Filter distribution, flushing instructions - Communications Team
- **Follow-up water testing:** Test water in buildings where lead service lines have been replaced 3 months and 6 months after replacement - Operations Team
- **Data Maintenance:** Updated lead service line map to reflect remediation and newly identified properties with lead service line - Data Team

Detailed Workflow for Operations Team:

- Eligible property owners will receive a letter from DEP notifying them of a lead service line on their property (DEP, 2025).
- A DEP contractor will contact the property owner to schedule an inspection and a replacement date for the service line (DEP, 2025).
- The property owner or a designated representative should be present on the property on the replacement date (DEP, 2025). DEP ensures minimal water service disruptions during the replacement process. Depending on the duration and complexity of the replacement, the DEP might also need to install a temporary bypass connection to a

water truck, a nearby building's system, or the city's water main to maintain continuous water flow.

- DEP provides a lead pitcher filter and cartridges, along with flushing instructions, after replacement (DEP, 2025).
- DEP directs property owners to flushing directions and videos available on the DEP website (DEP, 2025).
- Restoration of streets and sidewalks is completed within 2–4 weeks following the service line replacement.
- Storage and disposal/recycling of removed lead service.
- DEP will offer sample water 3 and 6 months after replacement to confirm low lead levels.

Hiring Breakdown:

- 1 Program Manager: sourced from existing staff
- 3 Department Heads: sourced from existing staff
- 2 GIS Analysts: sourced from existing staff
- 1 Data Analyst: external hire
- 5 Project Managers: sourced from existing staff
- 1 Public Relations Manager: sourced from existing staff
- 1 Designer: external hire
- 1 Community Engagement Manager:
- 5 Community Engagement Specialists: external hires
- 5 Trainers/Outreach Educators: external hires
- 10 Construction/Engineering Crews: third-party contractor, 3–5 workers per crew

Total Staff: 25 Full-Time Staff; 30–50 Contractors

Appendix C | Detailed Budget Structure

Personnel Service						
Title	Headcount	Quarter Starts	Salary	Internal/External	Notes	Total
Leadership & Administration						
Program Manager	1	1	\$ 204,243	Internal		\$ 204,243
Department Head	3	1	\$ 90,000	Internal		\$ 270,000
Management Total					Including 35% fringe	\$ 640,228
Data Department						
GIS analyst	2	2	\$ 80,000	Internal		\$ 146,667
Data Analyst	1	2	\$ 80,000	External	Including insurance	\$ 73,333
Data Total					Including 35% fringe	\$ 198,000
Communications Department						
Public Relations						
Manager	1	2	\$ 80,000	Internal		\$ 60,000
Designer	1	only 2,3	\$ 60,000	Internal		\$ 30,000
Community Engagement						
Engagement Manager	1	2	\$ 80,000	External	Including insurance	\$ 60,000

Community Liaison	5	2	\$ 60,000	external	Including insurance	\$ 225,000
Educators	5	2	\$ 60,000	external	Including insurance	\$ 150,000
Communications Total					Including 35% fringe	\$ 708,750
Operations Department						
Project Manager	5	2	\$ 70,000	Internal		\$ 320,833
Operation Total					Including 35% fringe	\$ 433,125
Total						\$ 1,980,103

Other Than Personnel Service (OTPS)					
	Quantity	Quarter start	Cost	Note	Total
Key Leadership					
Meeting Office Supply	4	1	\$ 250.00	10 ppl per meeting	\$ 1,000.00
Food & Beverage for meeting	4	1	\$ 1,800.00	180 per person	\$ 7,200.00
Phones+ computers subsidy	4	1	\$ 50.00	50 per month per ppl	\$ 2,400.00
General Meeting					\$ 10,600.00
Data					
Laptop	3	1	\$ 1,800.00	GIS specialist	\$ 5,400.00
Portable SSD (ITB)	3	1	\$ 120.00	file&data backup	\$ 360.00
USB adapter	3	1	\$ 40.00		\$ 120.00
Hardware					\$ 5,880.00

Communications					
Printing for letters	1,800	2	\$ 1.25	600 site 3 language	\$ 2,250.00
Education material	2,160	2	\$ 0.80	4 page black&white booklet / 720 ppl per quarter	\$ 1,728.00
Notices mailing	600	2	\$ 0.78	first class stamp	\$ 468.00
Communication & Outreach					\$ 193,446.00
Public educational training	36	3	\$ 2,000.00	6 per month starting from Q2	\$ 72,000.00
Advertising (Subway)	6	3	\$ 14,600.00		\$ 87,600.00
Advertising (TV+radio)	96	3	\$ 6,450.00	2 spots per media per week	\$ 619,200.00
Advertising (social media)		3	\$ 4.00	6M on X and 3M on tiktok	\$ 40,000.00
Vehicles for event	132	3	\$ 150.00	Every workday	\$ 19,800.00
Public Relation					\$ 838,600.00
Operations					
Vehicles /Trucks	193	2	\$ 150.00		\$ 28,950.00
Post LSL replacement filter	12,000	2, 3, 4	\$ 70.00	20 unit per site	\$ 840,000.00
Waste handling	600	2	\$ 150.00		\$ 90,000.00
Material gap	600	2	\$ 600.00		\$ 360,000.00
Temporary water supply	600	2	\$ 600.00	3 day per site	\$ 360,000.00
Operation Material					\$ 1,678,950.00
Contractor (LSL replacement)					
Cost of replacement	600		\$ 1,250.00		\$ 750,000.00

Lead Test Kits	1,800		\$ 105.00	45 per test-kit \$15 shipping	\$ 189,000.00
Salary	600	2	\$ 30.00	8 hour per day 3 day per site, 5 ppl per crew, 60 site per crew	\$ 2,160,000.00
Trinnex			\$ 176,666.67	Annual fee 530000/3	\$ 176,666.67
Contractor Fee				Sum *(1+20%)	\$ 3,930,800.00
Total					\$ 6,658,276.00

Summary	
Personnel Service	\$ 1,980,103
Other Than Personnel Service	\$ 6,658,276
Total	\$ 8,638,379

Appendix D | Performance Measurement Indicators

Table D-1. Input measurement indicators details

Metric	Timeline/ Frequency	Reporting Mechanism & Chain of Communication	Feedback/ Change Management
Program staffing and budget allocation			
Total approved budget broken down into Personnel Services (PS) and Other Than Personnel Services (OTPS)	End of Month 1; Q1–Q4 (quarterly monitoring of expenditure against budget baseline)	Formal budget status report; Program Manager to DEP Commissioner	Meetings to reflect on funding allocation efficiency and unexpected expenses occurred
Number of staff secured (internal and external) and active key roles (number of staff and their departments)	End of Month 2; Q1–Q4 (quarterly review)	Internal staffing report; Program Manager to DEP Commissioner	All staff meeting to address staff capacity concerns
GIS map completion			
Number of childcare facilities identified and confirmed that have lead service lines	End of Q1; with continuous tracking until the end of Q4	Updates to GIS platform; GIS Analysts to Heads of Data, Communication, and Operations Departments	Measure the process methodology (including process and data analysis)

Table D-2. Work Process measurement indicators details

Metric	Timeline/ Frequency	Reporting Mechanism & Chain of Communication	Feedback/ Change Management
Replacement process performance and quality			
Time to complete pipe replacements	Start at Q2; Monthly tracking and quarterly review	Contractor reports; from Contractor to Operation	If the average days >2 days, investigate contractor delays or
Average days to			

complete each replacement		Department	inaccurate data, adjust workflow and processes
Error rate in construction (rework rate)			If rework rate >5% ¹ , initiate corrective action plan: add hold-points, material/method review
Time to complete surface restoration post-replacements			If restoration >7 days ² period, assign a dedicated restoration crew, and investigate materials and weather

Table D-3. Output measurement indicators details

Metric	Timeline/ Frequency	Reporting Mechanism & Chain of Communication	Feedback/ Change Management
Lead service line replacement operations			
Number of lead service lines replaced	Start at Q2; Monthly tracking and quarterly review	Contractor reports; from Contractor to Operation Department	If the number is low, investigate contractor delays or inaccurate data, adjust workflow and processes
Number of lead pipes disposed of at recycling centers		Field reports; from Contractors to Operation Department	If disposal verification lags, require photo documentation, and reconcile weekly with field logs.
Number of surface restoration post-replacement completed			If completion lag or backlog grows, investigate causes, verify outstanding scope and permits, and re-sequence the

¹ McDonald, R. (2015, July). Root causes & consequential cost of rework.

² Federal Highway Administration. (2006, August). Guide for curing portland cement concrete pavements, II.

			schedule.
Number of pipes replaced privately (without DEP assistance)		Community engagement reports; from Communication Department to Program Manager	If private replacements lag, assess awareness and barriers (cost, permits, contractor access), and target outreach in low-uptake areas.
Community engagement and participation			
Number of community meetings and workshops completed	Start at end-Q1; Monthly tracking by Communication Department and quarterly review	Events log and community engagement reports; from Communication Department to Program Manager	If attendance is low or unrepresentative, adjust time/place, co-host with trusted partners, and publish Q&A follow-ups.
Number of households informed or notified prior to replacement			If reach or impressions are low: diversify channels (like local radio, neighborhood newsletters, door-to-door, faith/community) and A/B test messages.
Amounts of media coverage and campaigns			
Number of lead testing kits distributed	Start at Q2; Monthly tracking by Communication Department and quarterly summary	Operational reports; from Communication Department to Program Manager	Track turnaround and close the loop with results and next-step guidance. Redeploy where return rates lag.
Number of point-of-use (PoU) filters distributed and verified			Have a buffer stock (at least 2 weeks of demand) and check supply on hand weekly. If inventory is short, release buffer

Table D-4. Impact measurement indicators details

Metric	Timeline/ Frequency	Reporting Mechanism & Chain of Communication	Feedback/ Change Management
Lead levels in drinking water			
Reduction in lead levels concentration in drinking water (comparison between pre- and post-replacement)	Start in Q1 for pre-replacement, and Q3 for post-replacement; with continuous tracking and quarterly review	Water quality analysis report (derived from lead testing kits); from Communication Department to Program Manager	Initiate immediate re-sampling (first-draw and flushed) and review of sampling methods
Blood lead levels in children			
Reduction in blood lead level (BLL) in children (<6 years)	Start in Q2 by reviewing children's annual physical reports; with continuous tracking and quarterly review	BLL in children analysis report; from Communication Department to Program Manager	If BLLs do not decline 3 to 6 months post-replacement, reassess plumbing materials, and communications; update prioritization criteria to focus on high-risk areas.
Public awareness and confidence			
Number of people removed from harm's way (individuals no longer at risk of lead exposure after LSLR completion, both under age six and over age six)	Start at Q2; Monthly tracking and quarterly review	Operation Report; from Operation Department to Program Manager	Reweight scheduling to prioritize high-occupancy childcare facilities and/or buildings
Number of people who privately replace their lead service line	Start in Q3; with continuous tracking and quarterly review	Community engagement reports; from Communication Department to Program Manager	If private replacements lag, assess awareness and barriers (cost, permits, contractor access), and target outreach in low-uptake areas.

Appendix E | Master Calendar

#	Activities	Person in Charge	Q1			Q2			Q3			Q4		
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Stage 1: Organizational Set-up														
1	Confirm funding sources and finalize the budget allocations strategy	Program Manager (PM)												
2	Appoint and onboard department heads (3ppl)	PM												
3	Recruit, onboard, and train staffs in data (3ppl) and operations departments (5ppl)	PM, Data Head, Operations Head												
4	Recruit, onboard, and train staffs in communications departments (13ppl)	PM, Communications Head												
5	Pre-mobilize with existing contractor (CDM Smith & Trinnex) on all pre-start requirements	PM, Operations Head												
6	Finalize high-level plan of each departments (e.g., cadence, PIC, routine reviews, KPIs)	PM, Department Head*3												
Continuous Review & Reporting														
7	End of Jan: submit the budget allocation plan to DEP Commissioner	PM												
8	End of Mar: submit the staffing status update													
Stage 2: Planning														
Goal 1: 600 Childcare Facilities														
9	Create a GIS map (childcare facilities x high lead service line density)	Data Head, GIS Analysts												
10	Identify childcare facilities that require replacement based on map													

11	Prepare the notice and presentation materials for affected childcare facilities, parents, property managers, etc.	Communication Head, PR Team																	
12	Schedule replacement, allocate labor, and secure permits	Operations Head, Project Managers																	
Goal 2: Citywide Awareness with Targeted Outreach																			
13	Identify likely self-funding pipe replacers (e.g., high-income neighborhoods)	Data Head, GIS Analyst																	
14	Identify transit lines serving potential self-funders																		
15	Develop an informational website on testing, licensed master plumbers, replacement, etc.	Data Head, Data Analysts																	
16	Develop on-site education sessions with materials (booklet, slides, posters, etc.)	Community Engagement Team, PR Team																	
17	Design ads for subway, TV, radio, and social media	PR Manager, Designer																	
Continuous Review & Reporting																			
18	Develop internal Trinnex dashboard for performance management	Data Head, Data Analysts																	
Stage 3: Implementation																			
Goal 1: 600 Childcare Facilities																			
19	Inform & educate childcare facilities' staff, parents, property managers prior to replacement	Community Engagement Team																	
20	Replace lead pipes	Project Managers, Replacement Crews																	
21	Provide temporary water service (as needed)																		
22	Restore streets/sidewalks																		
23	Collect pre- and post-replacement water samples																		

Appendix F | Distribution of Lead Service Lines at Childcare Programs

All tables and figures in this appendix were created using publicly available datasets in December 2025 from NYC OpenData (DOE Childcare Regulated Programs; DEP Lead Service Line Location Coordinates) and ArcGIS Hub (NYC Borough Boundary).

Table F-1. Lead Service Line Counts and Percentages by Borough

Borough	Total Service Lines (Count)	Confirmed LSL (Count)	Confirmed LSL (%)	LSL Status Unknown (Count)	LSL Status Unknown (%)
Manhattan	42,160	3,879	9%	6,595	16%
Bronx	89,357	15,600	17%	6,197	7%
Brooklyn	275,918	33,624	12%	59,991	22%
Queens	324,264	58,817	18%	35,661	11%
Staten Island	125,203	7,087	6%	10,859	9%
Citywide Total	856,902	119,007	13.89%	119,303	13.92%

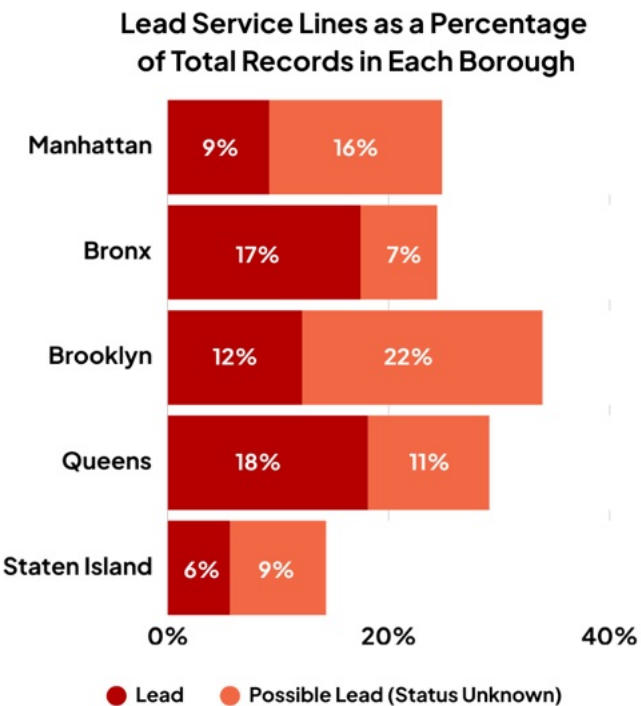
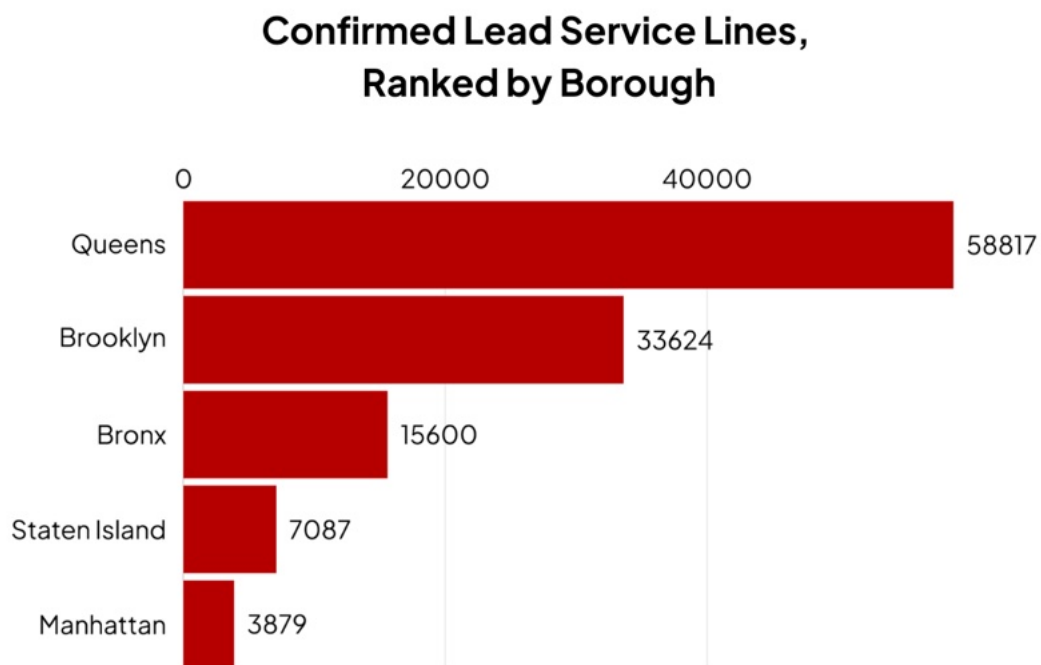


Figure F-1. Lead Service Lines as a percentage of total records in each borough

Table F-2. Service Lines and Lead Service Lines by Borough (Counts and Share of Citywide Total)

Borough	Total Service Lines (Count)	Confirmed LSL (Count)	Confirmed LSL as % of Citywide Total Service Lines
Manhattan	42,160	3,879	0.45%
Bronx	89,357	15,600	1.82%
Brooklyn	275,918	33,624	3.92%
Queens	324,264	58,817	6.86%
Staten Island	125,203	7,087	0.83%
Citywide Total	856,902	119,007	13.89%

**Figure F-2.** Confirmed lead service lines, ranked by borough**Table F-3.** Childcare Facilities with Confirmed LSL and Enrolled Children, by Borough

Borough	Total Number of Childcare Facilities	Confirmed LSL (Number of Centres)	Confirmed LSL (%)	Capacity of Childcare Facilities (Number of Children)
Manhattan	956	35	3.66%	567
Bronx	3,438	387	11.26%	5,884
Brooklyn	2,038	169	8.29%	2,752
Queens	1,447	190	13.13%	3,031
Staten Island	268	27	10.07%	416

Table F-4. Childcare Facilities with Status Unknown LSL and Enrolled Children, by Borough

Borough	Total Number of Childcare Facilities	Status Unknown LSL (Number of Centres)	Status Unknown LSL (%)	Status Unknown LSL (Number of Children)
Manhattan	956	86	15.17%	1,651
Bronx	3,438	219	3.72%	4,014
Brooklyn	2,038	295	10.72%	6,139
Queens	1,447	113	3.73%	2,345
Staten Island	268	33	7.93%	796

Table F-5. Childcare Facilities and Confirmed LSL by Borough (Counts and Share of Citywide Total)

Borough	Total Number of Childcare Facilities	Confirmed LSL (Number of Centres)	Confirmed LSL as % of Citywide Total Childcare Facilities
Manhattan	956	35	0.43%
Bronx	3,438	387	4.75%
Brooklyn	2,038	169	2.07%
Queens	1,447	190	2.33%
Staten Island	268	27	0.33%
Total	8,147	808	9.92%

Childcare Facilities with Confirmed Lead Service Lines by Borough (Counts and % Share of Citywide Total)

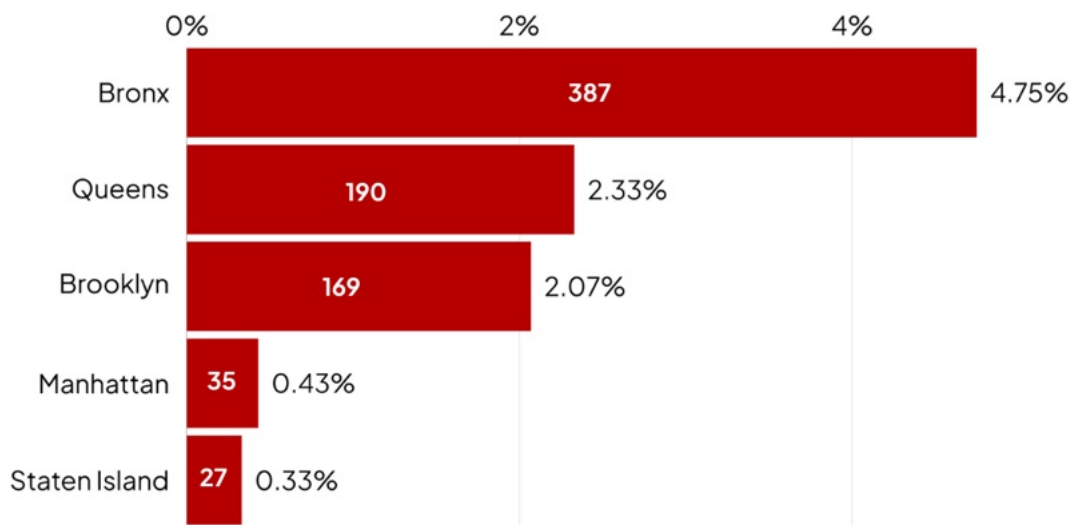


Figure F-3. Childcare facilities and confirmed lead service lines by borough (counts and % share of citywide total)

Number of Children in Childcare Facilities with Confirmed Lead Service Lines, Ranked by Borough

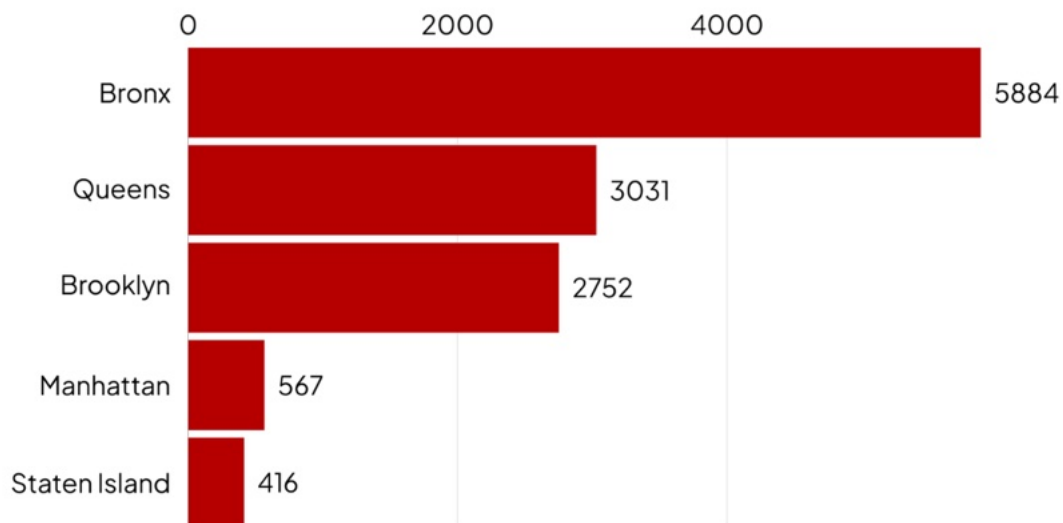
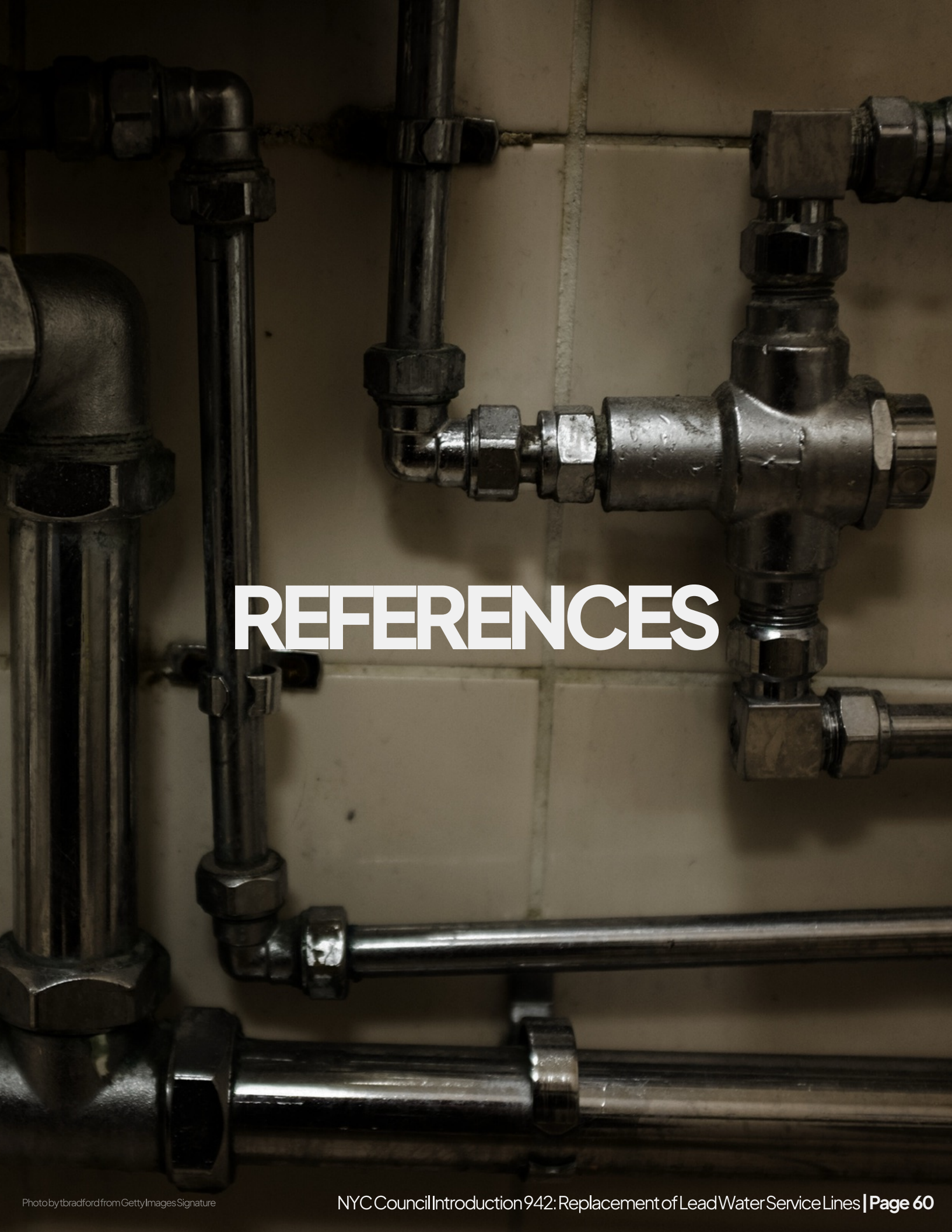


Figure F-4. Number of children in childcare facilities with confirmed lead service lines, ranked by borough



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