ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 141 and 142

[EPA–HQ–OW–2022–0801; FRL–5423.2–02–OW]

RIN 2040–AG16

National Primary Drinking Water Regulations for Lead and Copper: Improvements (LCRI)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: In December 2023, the U.S. Environmental Protection Agency (EPA) requested comment on the proposed the Lead and Copper Rule Improvements (LCRI), which informed the revisions to the National Primary Drinking Water Regulation (NPDWR) for lead and copper. After consideration of public comment on the LCRI, and consistent with the provisions set forth under the Safe Drinking Water Act (SDWA), the EPA is finalizing revisions to the NPDWR for lead and copper. In this rule, the agency is finalizing requirements for drinking water systems to replace lead and certain galvanized service lines. The final rule also removes the lead trigger level, reduces the lead action level to 0.010 mg/L, and strengthens tap sampling procedures to improve public health protection and simplify implementation relative to the 2021 Lead and Copper Rule Revisions (LCRR). Further, this final rule strengthens corrosion control treatment, public education and consumer awareness, requirements for small systems, and sampling in schools and child care facilities. The final rule will significantly reduce the adverse human health impacts of exposure to toxic lead in drinking water.

DATES: *Effective date:* This final rule is effective on December 30, 2024.

Judicial review: For judicial review purposes, this final rule is promulgated as of October 30, 2024.

Compliance dates: The compliance date for the revisions to 40 CFR part 141, subpart I, is set forth in § 141.80(a). The compliance date for the revisions to 40 CFR 141.2 and 141.31 is November 1, 2027. The compliance date for the changes made to 40 CFR part 141, subpart O, is set forth in § 141.152(a). The compliance date for the changes to 40 CFR part 141, subpart Q (§ 141.202 and appendices A and B) is November 1, 2027.

ADDRESSES: The EPA has established a docket for this action under Docket ID No. EPA–HQ–OW–2022–0801. All documents in the docket are listed on the *https://www.regulations.gov* website. Although listed in the index, some information is not publicly available, *e.g.,* Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form. Publicly available docket materials are available electronically through *https://www.regulations.gov*.

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I. Executive Summary

The United States Environmental Protection Agency's (EPA) mission is to protect human health and the environment. The EPA is finalizing the Lead and Copper Rule Improvements (LCRI) to significantly reduce the risk of exposure to lead through drinking water. There is no known safe level of lead in drinking water. Exposure to drinking water contaminated with lead can cause serious human health impacts including neurodevelopmental problems in children and heart disease in adults. Young children and pregnant people are especially susceptible to the

impacts of lead exposure. Reducing lead in drinking water will reduce the risk of negative neurodevelopmental outcomes for children as well as reduce a range of health risks to adults. This final rule builds on the 2021 Lead and Copper Rule Revisions (LCRR) and the pre-2021 Lead and Copper Rule (LCR), originally promulgated in 1991.

The EPA conducted a review of the 2021 LCRR in accordance with Executive Order 13990 [1] and announced its intention to strengthen the 2021 LCRR with this new rulemaking, the LCRI, to address key issues and opportunities identified in the review. This final LCRI addresses the priorities the EPA identified in the 2021 LCRR review, including the equitable replacement of lead service lines (LSLs) in the nation, improving identification of where LSLs are located, and triggering action in communities most at risk of lead exposure, and streamlined and improved implementation of the rule relative to the 2021 LCRR. This final LCRI is the culmination of numerous meaningful consultations with stakeholders and the public during the 2021 LCRR review, engagements and consultations held to support the development of the LCRI, and public comments received on the proposed LCRI.

The LCRI makes important advancements in protecting children and adults from the significant and irreversible health effects of exposure to lead in drinking water. These advancements are scientifically based and incorporate drinking water system best practices. The final rule strengthens the lead and copper rule in five focus areas: (1) achieving lead pipe replacement within 10 years, (2) locating legacy lead pipes, (3) improving tap sampling, (4) lowering the lead action level, and (5) strengthening protections to reduce exposure. The final rule also includes compliance dates and an updated benefits and costs analysis. Each of these topics is summarized below, in sequential order.

Achieving Lead Pipe Replacement Within 10 Years

This final rule provides a fundamental shift to a more preventive approach to lead in drinking water. This is based on the EPA's experience in implementing the lead rule for many years. Specifically, based on over 30 years of implementing the 1991 LCR, the EPA has determined that requiring lead service line replacement (LSLR) based on tap sampling and 90th percentile lead levels alone is insufficient to protect public health. LSLs are a source of lead exposure in drinking water, even when systems are optimized at or below the lead action level.

The science is clear that there is no known safe level of lead in drinking water, especially for children. Among other effects, lead exposure can cause damage to the brain and kidneys and can interfere with the production of red blood cells that carry oxygen to all parts of the body. In children, even low levels of lead exposure can cause cognitive health effects like lower intelligence quotient (IQ) as well as learning and behavioral problems. In adults, health effects include elevated risk of heart disease, high blood pressure, kidney or nervous system problems, and cancer.

In the LCRI, the EPA is requiring water systems to replace all lead and certain galvanized service lines (specifically, galvanized requiring replacement (GRR) service lines) under their control no later than 10 years after the compliance date. The LCRI provides, in limited circumstances, additional time for some systems to complete systemwide full service line replacement. Water systems must replace lead and GRR service lines under their control regardless of the lead levels occurring in tap or other drinking water samples. Replacing lead and GRR service lines will significantly reduce lead releases into drinking water. In addition, while consistently well-operated and optimized corrosion control treatment (CCT) is generally effective at reducing lead to low levels, elimination of lead and GRR service lines will result in even greater public health protection by eliminating a significant lead exposure source and will minimize the impacts of CCT implementation errors that have been documented over the years.

Historically, lead service lines,[2] as well as lead-bearing fixtures and solder, were commonly used in water distribution systems as well as in home plumbing. While replacing LSLs does not eliminate all lead exposures from tap water because plumbing systems inside homes and buildings (*i.e.,* premise plumbing) can also contain lead components, replacing LSLs removes a key source of lead in drinking water. Where present, LSLs represent the greatest lead exposure source through drinking water (Sandvig et al., 2008).[3] Buildings and homes built before 1986 often have LSLs connecting their plumbing system to the main water supply line under the street. These LSLs can deteriorate or corrode, releasing lead particles into the drinking water (Sandvig et al., 2008). Modeling done as part of the LCRI economic analysis confirms that LSL presence significantly contributes to drinking water lead levels (USEPA, 2024a).

Locating Legacy Lead Pipes

Knowing where lead pipes are located is critical to replacing them efficiently and equitably, as well as for informing consumers (*i.e.,* persons served) so they can take actions to reduce their exposure to lead. The LCRI builds upon the 2021 LCRR's requirement for water systems to create an initial inventory, to regularly update their inventory, and to identify the material of all service lines by the mandatory service line replacement deadline. Under the final LCRI, all water systems are required to make their service line inventories publicly available. Water systems must use a validation process to ensure the service line inventory is accurate. Water systems are also required to track lead connectors in their inventories and replace them as they are encountered.

Improving Tap Sampling

The final LCRI makes key changes to the required protocol for tap sampling informed by best practices already being deployed at the local and State level. Under the LCRI, water systems are required to collect first- and fifth-liter tap samples at sites with LSLs and use the higher of the two values when determining compliance. This method will better represent water that has been stagnant both within the LSL and the premise plumbing. This will help water systems better understand the effectiveness of their CCT.

[1] Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (86 FR 7037, January 20, 2021).

[2] The EPA does not believe that there are lead water mains in the United States and, if they do occur, it is extremely rare. The poor structural integrity of lead pipes that are more than two inches in diameter means that lead was primarily used in pipes of smaller diameter such as service lines. Conversely, the water mains that distribute water throughout a city or town tend to be six inches or larger in diameter. The common water main materials include ductile iron, PVC, asbestos cement, high-density polyethylene (HDPE), and concrete steel. The oldest water mains are cast iron and asbestos cement (Folkman, 2018).

[3] Sandvig et al. (2008) found that LSLs contributed an average of approximately 50 to 75 percent of the total lead mass measured at the tap, while premise piping and the faucet contributed approximately 20 to 35 percent and 1 to 3 percent, respectively. At sites with no LSL, premise piping and the faucet contributed a greater percentage of lead mass to the total lead mass measured at the tap (approximately 55 percent and 12 percent, respectively), while main samples ranged from approximately 3 to 15 percent.

Lowering the Lead Action Level

The final LCRI lowers the lead action level from 0.015 mg/L to 0.010 mg/L. When a water system exceeds the lead action level, it is required to inform the public, take actions associated with CCT, and employ public education measures to reduce lead exposure. For example, a system may be required to install or adjust CCT to reduce lead that leaches into drinking water. Actions resulting from a lowered lead action level will improve public health benefits because they will require systems to take actions to reduce lead exposure sooner. The EPA also emphasizes the many final rule requirements that will result in additional public health benefits irrespective of systemwide lead levels, recognizing there is no safe level of lead in drinking water. For example, the final rule requires full service line replacement and public education provisions independent of a system's 90th percentile lead level.

Strengthening Protections To Reduce Exposure

The final LCRI requires water systems with continually high lead levels to conduct additional outreach to consumers and make filters certified to reduce lead in drinking water available to all consumers. These additional actions can reduce consumer exposure to higher levels of lead in drinking water while the water system works to reduce systemwide lead levels (*e.g.,* achieving 100 percent replacement of lead and GRR service lines, installing or re-optimizing optimal corrosion control treatment (OCCT)), which may take years to fully implement.

Benefits and Costs Analysis

As part of its Health Risk Reduction and Cost Analysis (HRRCA), the EPA evaluated quantifiable and nonquantifiable health risk reduction benefits and costs associated with the final LCRI. At a two percent discount rate, the EPA estimates the quantifiable annual benefits of the final rule will be $13.49 to $25.14 billion and the quantifiable annual costs of the rule will be $1.47 to $1.95 billion in 2022 dollars. The EPA Administrator confirms the determination made at proposal that the quantified and nonquantifiable benefits of the final LCRI justify the quantified and nonquantifiable costs.

To evaluate these benefits and costs, the EPA determined which entities would be affected by the LCRI, quantified costs using available data, and described nonquantifiable costs. The EPA quantified benefits by estimating and monetizing avoided reductions in IQ, cases of attention-deficit/hyperactivity disorder (ADHD) in children, lower birth weights in children, and cases of cardiovascular disease premature mortality in adults associated with lead and GRR service line replacement, CCT installation and re-optimization, the use of point-of-use devices as a small system compliance option, and the temporary use of point-of-use devices and water filters in systems with multiple lead action level exceedances. Prior efforts to quantify benefits associated with reducing lead in drinking water have focused on neurodevelopmental outcomes in children because of the lifelong impact on their ability to thrive. The current benefits assessment also incorporates recent scientific analyses that allow better quantification of benefits to adults associated with reductions in lead exposure.

There are many additional benefits of the LCRI that the EPA assessed qualitatively. For example, the requirements for water systems to issue public education (including using languages of the communities where systems serve a large proportion of consumers with limited English proficiency), to make the inventory of service line and connector materials publicly available, and to make the service line replacement plan publicly available will promote the public's behaviors to reduce their exposure to lead in drinking water. Health benefits qualitatively evaluated include reduced incidence of renal effects, reproductive and developmental effects (apart from ADHD), immunological effects, neurological effects (apart from children's IQ), and cancer.

In addition, persons served by systems required to install or re-optimize OCCT under the final LCRI and living in homes with premise plumbing containing lead will receive health benefits from reduced lead exposure that were not quantified in the analysis of the final rule. Increased use of CCT resulting from the final LCRI's lower lead action level and improved tap sampling may have a beneficial secondary effect of reducing copper levels and avoiding certain negative health impacts of copper, such as acute gastrointestinal conditions and health effects associated with Wilson's Disease. Other nonquantifiable co-benefits associated with the increased use of corrosion inhibitors resulting from the LCRI's lower lead action level and improved tap sampling include extending the useful life of plumbing components and appliances (*e.g.,* water heaters), reduced plumbing maintenance costs, reduced treated water loss from the distribution system due to leaks, and reduced potential liability and damages from broken pipes in buildings.

To support eliminating LSLs, the Infrastructure Investment and Jobs Act (Pub. L. 117–58), also referred to as the Bipartisan Infrastructure Law (BIL), included $15 billion specifically appropriated for LSLR projects and associated activities directly connected to the identification and replacement of LSLs. The BIL also included over $11.7 billion for the Drinking Water State Revolving Fund General Supplemental, which can also be used for lead service line replacement as well as other drinking water projects. The agency notes the costs cited above do not take into account this available funding source. The EPA is also providing significant technical assistance to communities through efforts such as the ''Get the Lead Out Initiative'' and ''Lead Service Line Replacement Accelerators,'' which assist efforts to conduct service line replacement.

Compliance and Public Process

Water systems must comply with the requirements of the LCRI starting three years after promulgation of this final rule. The EPA is requiring water systems to comply with select requirements introduced in the 2021 LCRR that the agency did not propose to change in the LCRI, starting on October 16, 2024. This includes the 2021 LCRR initial LSL inventory, notification of service line material, and associated reporting requirements. Water systems must also comply with the Tier 1 public notification (PN) requirement for a lead action level exceedance that was introduced under the 2021 LCRR starting October 16, 2024. Please see section V.B.3 of this preamble for a full discussion of the provisions with a compliance date of October 16, 2024. The final LCRI otherwise requires water systems to comply with the pre-2021 LCR (and not the 2021 LCRR) between October 16, 2024, and the LCRI compliance date so that water systems can directly transition from the regulatory scheme of the LCR to the LCRI.

II. General Information

The final Lead and Copper Rule Improvements (LCRI) builds upon the previous lead and copper rules. The LCRI revises the most recent lead and copper rule, the 2021 Lead and Copper Rule Revisions (LCRR), which was promulgated on January 15, 2021 (86 FR 4198, USEPA, 2021a). Key revisions in the LCRI address the opportunities for

improvement identified in the ''Review of the National Primary Drinking Water Regulation: Lead and Copper Rule Revisions'' (or LCRR review) including proactively and equitably replacing all lead service lines (LSLs), strengthening compliance with tap sampling to better identify communities most at risk of elevated lead in drinking water to better compel actions to reduce health risks, reducing the complexity of the regulation, and ensuring that the rule is more understandable (86 FR 71574, USEPA, 2021b). The United States Environmental Protection Agency (EPA) developed the LCRI considering the input received in numerous meaningful consultations and engagements over several years, including during the LCRR review and in stakeholder outreach conducted to inform the development of the proposed and final LCRI, along with almost 200,000 public comments submitted to the docket as well as oral comments provided to the EPA during the public hearing held January 16, 2024, for the proposed LCRI.

A. What does the final LCRI require?

The LCRI requires full service line replacement of lead and galvanized requiring replacement (GRR) service lines under the control of the water system, regardless of the system's 90th percentile lead level. Water systems are required to complete replacements within 10 years of the LCRI compliance date. There is a limited exception for systems with a high proportion of service lines requiring replacement: they are eligible for a deferred deadline if they meet a specified threshold and receive State approval. Systems with deferred deadlines and States must regularly assess whether they can complete the replacement at a faster rate. Water systems must identify all service lines of unknown composition (''unknown service lines'') to replace all lead and GRR service lines by the replacement deadline. Systems must also track lead connectors in their inventories and replace them whenever encountered during normal operations. All water systems with non-lead service lines in their inventories must validate the methods used to categorize those service lines as non-lead with some exceptions. All water systems with known or potential lead or GRR service lines must prepare and make publicly accessible a service line replacement plan which can facilitate the equitable replacement of all lead or GRR service lines by the replacement deadline.

The final LCRI reduces the lead action level from 0.015 mg/L to 0.010 mg/L, which will result in more water systems installing and re-optimizing optimal corrosion control treatment (OCCT) and providing public education to reduce drinking water lead exposure. Systems that exceed the lead action level three or more times in a five-year period must take additional actions to provide public education and make filters available.

The rule updates the tap sampling protocol by requiring systems to collect a first-liter sample (in addition to the fifth-liter sample required by the 2021 LCRR) at structures with LSLs and then use the higher of the first- or fifth-liter sample values at the LSL sites when calculating the 90th percentile. The first- and fifth-liter sample values represent water that has been stagnant in premise plumbing (plumbing within buildings) and within the service line, respectively, and therefore, more accurately identify where higher lead levels might be present compared to sampling the first liter or the fifth liter alone. Systems must prioritize sampling at sites most likely to contain lead and use this data to calculate the 90th percentile. The LCRI requires most systems with lead and GRR service lines to start (or continue) standard monitoring. Additionally, any system with a 90th percentile lead level above the LCRI lead action level, based on the system's results from the most recent tap monitoring period prior to the compliance date, will need to start (or continue) standard monitoring. The EPA updated the requirements for systems with insufficient Tier 1 and Tier 2 sites to meet their minimum required number of samples to use the highest sample results from Tiers 1, 2, and the next highest available tiers (equal to the minimum required number of samples) to calculate the 90th percentile. Sample site tiers are used to prioritize sampling locations and were first introduced in the 1991 LCR.

The LCRI requires States to set optimal water quality parameters (OWQPs) for medium systems (serving greater than 10,000 persons and fewer than or equal to 50,000 persons) that are required to optimize or re-optimize corrosion control treatment (CCT). These systems must meet those parameters to demonstrate that OCCT is being maintained. The rule allows all systems to defer OCCT or re-optimized OCCT (but maintain any existing CCT) if they can replace all lead and GRR service lines at a minimum percent annual rate within five years or less. Water systems with lead and GRR services lines and OCCT that are meeting their OWQPs are not required to re-optimize their OCCT more than once following a lead action level exceedance after the compliance date. After systems remove all of their lead and GRR service lines, they must re-optimize again if they exceed the lead action level. In addition, water systems may be required to re-optimize by the State at any time. Systems not required to re-optimize under the final rule still have to meet other requirements, including for public education if there are multiple action level exceedances (see sections IV.J and IV.K of this preamble).

The LCRI updates public education requirements, instituting changes to content and delivery frequency for more proactive messaging about lead in drinking water and actions individuals can take to reduce their exposure. It includes requirements to make information about lead in drinking water more accessible to consumers including individuals with limited English proficiency. The LCRI also introduces new public education requirements for lead and copper.

The LCRI revises the small system compliance flexibility provision to eliminate LSLR as a compliance option, as all systems must conduct mandatory service line replacement regardless of their 90th percentile lead level. The eligibility threshold for the flexibility for community water systems (CWSs) is lowered to those serving 3,300 or fewer persons.

The LCRI retains the requirements from the 2021 LCRR for CWSs to conduct sampling and public education in schools and child care facilities but expands the available waivers to include sampling efforts conducted prior to the rule compliance date, including sampling conducted through the Water Infrastructure Improvements for the Nation (WIIN) Act grant program. The LCRI also restructures and clarifies areas of the rule that did not change to make the rule more implementable.

Exhibit 1 compares the major differences among the pre-2021 Lead and Copper Rule (LCR), 2021 LCRR, and the final LCRI. Asterisks (*) in the pre-2021 LCR and 2021 LCRR column denote requirements that are retained in the final LCRI, and these requirements are, therefore, not repeated in the final LCRI column.

EXHIBIT 1—COMPARISON OF THE 2021 LCRR, PROPOSED LCRI, AND FINAL LCRI REQUIREMENTS

Pre-2021 LCR	2021 LCRR	Final LCRI
Service Line Inventory		
• Systems were required to complete a materials evaluation by the time of initial sampling. • No requirement to regularly update materials evaluation.	• All systems must develop an initial lead service line (LSL) inventory by October 16, 2024, that includes all service lines, regardless of ownership, categorized as lead, non-lead, galvanized requiring replacement (GRR), and unknown.* • The inventory must be made publicly accessible and available online for systems serving >50,000 persons.* • The publicly available inventory must include a locational identifier for each lead and GRR service line. • The LSL inventory must be updated based on the system's tap sampling frequency but no more than annually.	• All systems must review specified information that describes connector materials and locations. • Systems must include each identified connector in their baseline inventory by the LCRI compliance date. • Connector material categories include lead, non-lead, unknown, and no connector present. • The inventory must include a street address with each service line and connector, if available. • The inventory must be updated annually. • Systems must include in their inventories the total number of each type of service line, the number of lead and unknown connectors, the number of full lead and GRR service line replacements, and the number of partial lead and GRR service line repla cements. • Systems must respond to customer inquiries on incorrect material categorizations within 60 days. • Systems must validate the accuracy of their methods to categorize non-lead service lines in their inventory no later than 7 years after the compliance date by the end of the calendar year unless on a shortened or deferred deadline. ○ The validation pool includes all non-lead service lines except for those installed after the applicable Federal, State, or local lead ban; visually inspected at a minimum of two points on the pipe exterior; or previously replaced. ○ Systems may submit previous validation efforts in lieu of the LCRI requirements if they are at least as stringent as the requirements, and States must review and approve of these previous efforts. • Systems must identify all unknown service lines by their mandatory service line replacement deadline.
Service Line Replacement		
Replacement Plan • No requirement.	Replacement Plan • All systems with at least one lead, GRR, or unknown service line must develop an LSLR plan by the compliance date. • The plan must include a strategy to prioritize service line replacement.*	Replacement Plan • All systems with at least one lead, GRR, or unknown service line must develop the service line replacement plan by the compliance date. The plan includes the elements from the LCRR as well as two new elements: (1) a strategy to inform customers and consumers (persons served) about the plan and replacement program and (2) an identification of any legal requirements or water tariff agreement provisions that affect a system's ability to gain access to conduct full service line replacement. • The service line replacement plan must include additional plan elements if the system has at least one lead-lined galvanized service line or if the system is eligible for a deferred deadline. • Service line replacement plan must be publicly accessible; and available online for systems serving >50,000 persons. • The plan must be updated annually to include any new or updated information and submitted to the State on an annual basis. • By the compliance date, systems eligible for and planning to use deferred deadlines must include in the plan information on what the system identifies as the earliest deadline and fastest feasible rate to replace lead and GRR service lines that is no slower than 39 annual replacements per 1,000 service connections.

EXHIBIT 1—COMPARISON OF THE 2021 LCRR, PROPOSED LCRI, AND FINAL LCRI REQUIREMENTS—Continued

Pre-2021 LCR	2021 LCRR	Final LCRI
		• By the end of the second program year, the State is required to determine in writing whether a system with a deferred deadline is replacing lead and GRR service lines at the fastest feasible rate, either by approving the continued use of that deferred deadline or by setting the fastest feasible rate for the system. In addition to annual updates, systems with deferred deadlines must submit their plan every three years with updated information about why the replacement rate is still the fastest feasible. The State must review this information and determine in writing if the system with a deferred deadline is still replacing lead and GRR service lines at the fastest feasible rate, either by approving the continued use of that deferred deadline or by setting the fastest feasible rate.
LSLR • Replacement program requirements are based on the lead 90th percentile (P90) lead level, CCT installation, and/or source water treatment. • Systems conducting LSLR must annually replace at least 7 percent of LSLs in their distribution system. • Systems must replace the LSL portion they own and offer to replace the private portion. Systems are not required to bear the cost of replacing the private portion.[a] • Full LSLR, partial LSLR, and LSLs with lead sample results ≤ 0.015 mg/L (“test-outs”) count toward the 7 percent replacement rate. • Systems can discontinue LSLR after 2 consecutive 6-month monitoring periods at or below the lead action level. • Requires replacement of LSLs only (i.e., no GRR service lines).	LSLR • Replacement program requirements are dependent on P90 lead level for CWSs serving >10,000 persons: ○ If P90 > 0.015 mg/L: Must fully replace 3 percent of lead and GRR service lines per year based upon a 2-year rolling average (mandatory replacement) for at least 4 consecutive 6-month monitoring periods. ○ If P90 > 0.010 mg/L but ≤ 0.015 mg/L: Implement a goal-based LSLR program and consult the primacy agency (or State) on replacement goals for 2 consecutive 1-year monitoring periods. • CWSs serving ≤10,000 persons and all non-transient, non-community water systems (NTNCWSs) that select LSLR as their compliance option must complete LSLR within 15 years if P90 > 0.015 mg/L. See the *Small System Flexibility* section of this exhibit. • Annual LSLR rate is applied to the number of lead and GRR service lines when the system first exceeds the trigger or action level plus the number of unknown service lines at the beginning of the year. • Only full LSLR (replacement of the entire length of the service line) counts toward mandatory rate* and goal-based rate. • All systems must replace their portion of an LSL if notified by consumer of private side replacement within 45 days of notification of the private replacement. If the system cannot replace the system’s portion within 45 days, it must notify the State and replace the system’s portion within 180 days.* • Following each service line replacement, systems must: ○ Provide pitcher filters or point-of-use devices and 6 months of replacement cartridges to each customer after replacement.* Provide pitcher filters and cartridges before the affected portion of the line or the fully replaced service line is returned to service.* ○ Offer to collect a lead tap sample at locations served by the replaced line within 3 to 6 months after replacement.* • Requires replacement of lead connectors when encountered.* • Systems must make 2 good faith efforts to engage customers about LSLR. • Systems conducting partial LSLR must offer to replace the remaining portion of the service line. • Systems must replace service lines by a shorter deadline if determined feasible by the State.*	Service Line Replacement • Replacement program requirements are independent of systems’ P90 lead levels. • All CWSs and NTNCWSs with one or more lead, GRR, or unknown service line in their inventory must replace lead and GRR service lines under their control within 10 years, unless subject to a shortened or deferred deadline. • Systems must replace service lines at a cumulative average annual rate of 10 percent, unless subject to a shortened or deferred deadline. • Cumulative average replacement rate is applied to the total number of unknown, lead, and GRR service lines in the baseline inventory minus the number of unknown service lines that have been determined to be non-lead since the baseline inventory. • Systems that would have to annually replace more than 39 service lines per 1,000 service connections are eligible for deferred deadlines longer than 10 years. • States are required to set a shorter deadline for a system where it determines that a shorter deadline is feasible. • Where property owner consent is required for a system to access the service line, systems must make a reasonable effort (at least 4 attempts) to engage property owners about full service line replacement. • Systems conducting partial service line replacement, if not prohibited by the rule, must make a reasonable effort (at least 4 attempts) to engage property owners about full service line replacements for infrastructure projects that impact service lines and offer to replace the remaining portion of the service line not under their control within 45 days if replaced in coordination with an emergency repair.[a]

EXHIBIT 1—COMPARISON OF THE 2021 LCRR, PROPOSED LCRI, AND FINAL LCRI REQUIREMENTS—Continued

Pre-2021 LCR	2021 LCRR	Final LCRI
LSL-Related Outreach • If a system replaces its portion only: ○ Provide notification to affected residences within 45 days prior to replacement on possible elevated short-term lead levels and measures to minimize exposure.* ○ Include offer to collect lead tap sample within 72 hours of replacement. ○ Provide test results within 3 business days after receiving results.	LSL-Related Outreach • Notify consumers annually if they are served by a lead, GRR, or unknown service line.* • Provide notice and educational materials to consumers during water-related work that could disturb LSLs. • Provide filters to consumers for disturbances to a lead, GRR, or unknown service line caused by replacement of an inline water meter, water meter setter, or connector. • Systems subject to goal-based program must: ○ Conduct targeted outreach that encourages consumers with LSLs to participate in the LSLR program. ○ Conduct an additional outreach activity if they fail to meet their goal. • Systems required to conduct LSLR must include information about the LSLR program in public education (PE) materials that are provided in response to P90 > action level.*	Service Line-Related Outreach • Provide notice and educational materials during water-related work that could disturb lead, GRR, or unknown service lines, including disturbances due to inventorying efforts, to consumers within 24 hours or before the service line is returned to service, and to customers within 30 days. • Provide filters to consumers for disturbances to a lead, GRR, or unknown service line caused by replacement of an inline water meter, water meter setter, connector, or water main. • If a CWS does not meet the mandatory service line replacement rate, the CWS must conduct additional public outreach activities to encourage customers with lead, GRR, and unknown service lines to participate in the service line replacement program. • Removes goal-based program outreach activities.
Action Level and Trigger Level		
• P90 level above lead action level of 0.015 mg/L or copper action level of 1.3 mg/L requires additional actions. • Lead action level exceedance requires 7 percent LSLR (includes partial replacements), CCT recommendation and possible study and installation, and PE within 60 days after the end of the monitoring period.	• P90 level above lead action level of 0.015 mg/L or copper action level of 1.3 mg/L requires more actions than the previous rule. • Defines lead trigger level as P90 > 0.010 mg/L and triggers additional planning, monitoring, and treatment requirements. • Lead action level exceedance requires 3 percent full LSLR, OCCT installation or re-optimization, PE, and public notification (PN) within 24 hours. • Trigger level exceedance requires goal-based LSLR and steps taken towards CCT installation or re-optimization.	• Removes the lead trigger level. • P90 level above lead action level of 0.010 mg/L or copper action level of 1.3 mg/L requires actions including installing or re-optimizing CCT, and PE as well as Tier 1 PN (for lead action level exceedances). • Mandatory full service line replacement of lead and GRR service lines is independent of P90 lead levels.
Lead and Copper Tap Sampling		
Sample Site Selection • Prioritizes collection of samples from sites with sources of lead in contact with drinking water. • Highest priority given to sites served by copper pipes with lead solder installed after 1982 or containing lead pipes and sites served by LSLs. • Systems must collect 50 percent of samples from LSLs, if available.	Sample Site Selection • Prioritizes collecting samples from sites served by LSLs. All samples must be collected from sites served by LSLs, if available.* • Equal priority to copper pipes with lead solder, irrespective of installation date.* • Adds 2 tiers to prioritize sampling at lead and GRR service line sites above sites with copper with lead solder.*	Sample Site Selection • Combines the tap sample site selection tiering criteria for CWSs and NTNCWSs. • Removes galvanized service line or premise plumbing formerly downstream of a lead connector from Tier 3 sites. • Removes requirement for replacement sampling sites to be selected within reasonable proximity. • Clarifies that sites are considered no longer available for sampling after customer refusal or non-response after two outreach attempts.
Sample Collection and Inclusion in 90th Percentile Calculation • Requires collection of the first-liter sample after water has sat stagnant for a minimum of 6 hours.	Sample Collection and Inclusion in 90th Percentile Calculation • Requires collection of the fifth-liter sample in homes with LSLs after water has sat stagnant for a minimum of 6 hours. • Requires first-liter sample collection in homes without LSLs.* • Requires systems with insufficient Tier 1 and 2 sites to meet the minimum number of samples required by calculating the P90 from all Tier 1 and 2 sites and the highest samples from the next highest tier to equal the minimum number required. • Prohibits inclusion of samples collected under find-and-fix in the P90 calculation.* • Adds requirement that samples must be collected in wide-mouth bottles.* • Prohibits sampling instructions that include recommendations for aerator cleaning/removal and pre-stagnation flushing prior to sample collection.*	Sample Collection and Inclusion in 90th Percentile Calculation • Requires collection of the first- and fifth-liter samples in structures with LSLs after water has sat stagnant for a minimum of 6 hours. • Requires systems with insufficient Tier 1 and 2 sites to meet the minimum number of samples required by calculating the P90 from the highest sample values from the highest tiers sampled equal to the minimum number required. • Requires the higher value of the first- and fifth-liter lead concentration in structures with LSLs to be used to calculate the P90 value for lead. • Prohibits inclusion of samples following service line replacement in the P90 calculation. Prohibits the inclusion of more than one sample per site in each P90 calculation. • Revises the definition of a wide-mouth bottle.

EXHIBIT 1—COMPARISON OF THE 2021 LCRR, PROPOSED LCRI, AND FINAL LCRI REQUIREMENTS—Continued

Pre-2021 LCR	2021 LCRR	Final LCRI
Monitoring Frequency • Samples are analyzed for both lead and copper. • Systems must collect standard number of samples based on population; semi-annually unless they qualify for reduced monitoring. • Systems can qualify for annual or triennial monitoring at reduced number of sites. Monitoring schedule based on the number of consecutive years meeting the following criteria: ○ Serves ≤50,000 persons and P90 is at or below the lead and copper action levels. ○ Serves any population size, meets State-specified optimal water quality parameters (OWQPs), and P90 ≤ lead action level. • Triennial monitoring also applies to any system with lead P90 ≤ 0.005 mg/L and copper P90 ≤ 0.65 mg/L for 2 consecutive 6-month monitoring periods. • Based on rule criteria, systems serving ≤ 3,300 persons can apply for a 9-year monitoring waiver.*	Monitoring Frequency • Samples are analyzed for lead and copper, only copper, or only lead. This occurs when lead monitoring is conducted more frequently or at more sites than copper, and at LSL sites where a fifth-liter sample is only analyzed for lead.* • Lead monitoring schedule is based on the P90 level for all systems as follows: ○ P90 > 0.015 mg/L: Semi-annually at the standard number of sites. ○ P90 > 0.010 mg/L but ≤ 0.015 mg/L: Annually at the standard number of sites. ○ P90 ≤ 0.010 mg/L: Annually at the standard number of sites and triennially at reduced number of sites using same criteria as the LCR except copper P90 level is not considered. • Initial standard monitoring required for systems with lead and GRR service lines, and any system that does not sample under the requirements of the LCRR by the compliance date. • Systems must conduct standard monitoring if they exceed the action level, have a water quality parameter (WQP) excursion, and other criteria.	Monitoring Frequency • Monitoring schedule is based on both the P90 for lead and copper for all systems. Systems may retain or qualify for reduced monitoring based on the number of consecutive tap monitoring periods: ○ P90 ≤ action level for 2 consecutive 6-month periods: Annual monitoring at standard number of sites for lead and reduced number of sites for copper. ○ P90 < practical quantitation limit (PQL) for 2 consecutive periods: Triennial monitoring at the reduced number of sites for both lead and copper. • Initial standard monitoring schedule required for most systems with lead and/or GRR service lines in their inventory on the compliance date. • Additional criterion for when systems must start standard monitoring: Systems with no lead or GRR service lines in their inventory on the compliance date must start standard monitoring if they identify a lead or GRR service line in the future.
Corrosion Control Treatment (CCT) and Water Quality Parameters (WQPs)		
CCT • Systems serving > 50,000 persons were required to install treatment by January 1, 1997, with limited exception. • Systems serving ≤ 50,000 that exceed lead and/or copper action level(s) are subject to CCT requirements (e.g., CCT recommendation, study if required by the State, CCT installation). They can discontinue CCT steps if no longer exceed both action levels for 2 consecutive 6-month monitoring periods. • Systems must operate CCT to meet any OWQPs designated by the State that define optimal CCT. • There is no requirement for systems to re-optimize.	CCT • Specifies CCT requirements for systems with P90 lead level >0.010 mg/L but ≤ 0.015 mg/L: ○ No CCT: Must conduct a CCT study if required by the State. ○ With CCT: Must follow the steps for re-optimizing CCT, as specified in the rule. • Systems with P90 lead level >0.015 mg/L: ○ No CCT: Must complete CCT installation regardless of subsequent P90 levels if system has started to install CCT. ○ With CCT: Must re-optimize CCT. • CWSs serving ≤ 10,000 persons and all NTNCWSs can select an option other than CCT to address lead. See the *Small System Flexibility* section of this exhibit.	CCT • Systems with P90 lead level >0.010 mg/L: ○ No CCT: Must install CCT regardless of their subsequent P90 levels if they have started to install CCT. ○ With CCT: Must re-optimize OCCT. ○ Systems with OCCT and lead and GRR service lines meeting OWQPs need only re-optimize OCCT once after the compliance date, unless required to do so by the State. ○ Systems with OCCT that exceed the lead action level after removing all lead and GRR service lines will need to re-optimize again. • CWSs serving ≤ 3,300 persons and all NTNCWSs can select an option other than CCT to address lead. See the *Small System Flexibility* section of this exhibit. • Deferred OCCT or re-optimized OCCT for systems that can complete removal of 100 percent of lead and GRR service lines within 5 years or less of the date they are triggered into CCT steps. Systems with CCT must maintain CCT during the 5-year-or-less service line replacement program.
CCT Options Includes alkalinity and pH adjustment, calcium hardness adjustment, and phosphate or silicate-based corrosion inhibitor.	CCT Options Removes calcium hardness as an option and specifies any phosphate inhibitor must be orthophosphate.*	CCT Options No changes from the LCRR.
WQPs • No CCT: pH, alkalinity, calcium, conductivity, temperature, orthophosphate (if phosphate-based inhibitor is used), silica (if silica-based inhibitor is used). • With CCT: pH, alkalinity, and based on type of CCT either orthophosphate, silica, or calcium.	WQPs • Eliminates WQPs related to calcium hardness (i.e., calcium, conductivity, and temperature).* • All other parameters are the same as in the LCR.*	WQPs No changes from the LCRR.
WQP Monitoring • Systems serving >50,000 persons must conduct regular WQP monitoring at entry points and within the distribution system. • Systems serving ≤ 50,000 persons conduct monitoring only in those periods that exceed the lead or copper action level. • Contains provisions to sample at reduced number of sites in distribution system less frequency for all systems meeting their OWQPs.	WQP Monitoring • Systems serving >50,000 persons must conduct regular WQP monitoring at entry points and within the distribution system. • Systems serving ≤50,000 persons must continue WQP monitoring until they no longer exceed the lead and/or copper action level(s) for 2 consecutive 6-month monitoring periods. • To qualify for reduced WQP distribution monitoring, P90 lead level must be ≤ 0.010 mg/L and the system must meet its OWQPs.*	WQP Monitoring • Systems with CCT (unless deemed optimized) serving >10,000 persons must conduct regular WQP monitoring at entry points and within the distribution system. • Systems serving ≤10,000 persons and systems without CCT serving >10,000 persons but ≤50,000 persons that exceed the lead and/or copper action level(s) must conduct WQP monitoring until they no longer exceed lead and/or copper action level(s) for 2 consecutive 6-month monitoring periods. • Systems without CCT serving >10,000 persons but ≤50,000 persons that exceed the lead action level that are required to install CCT, must continue to conduct WQP monitoring.
Sanitary Survey Review Treatment must be reviewed during sanitary surveys; no specific requirement to assess CCT or WQPs.	Sanitary Survey Review CCT and WQP data must be reviewed during sanitary surveys against most recent CCT guidance issued by the EPA.*	Sanitary Survey Review No changes from the LCRR.

EXHIBIT 1—COMPARISON OF THE 2021 LCRR, PROPOSED LCRI, AND FINAL LCRI REQUIREMENTS—Continued

Pre-2021 LCR	2021 LCRR	Final LCRI
Find-and-Fix No required follow-up samples or additional actions if an individual sample exceeds the lead action level.	Find-and-Fix If individual tap samples >0.015 mg/L lead, find-and-fix steps include: • Conduct WQP monitoring at or near the site >0.015 mg/L. • Collect tap sample at the same tap sample site within 30 days.* ○ For LSL, collect any liter or sample volume.* • Perform needed corrective action.* • Document customer refusal or non-response after 2 attempts.* • Provide information to local and State health officials.*	Distribution System and Site Assessment (DSSA) • Changes the name from ''Find-and-Fix'' to ''Distribution System and Site Assessment'' to describe this requirement more precisely. • Requirements from the LCRR affect systems with individual tap samples >0.010 mg/L lead. • Clarifies that the distribution system sample location must be within a half mile radius of each site with a result >0.010 mg/L. • Water systems without CCT are not required to collect WQP samples for the DSSA CCT assessment.
Small System Flexibility		
No provisions for systems to elect an alternative treatment approach but sets specific requirements for CCT and LSLR.	Allows CWSs serving ≤10,000 persons and all NTNCWSs to implement an alternate compliance option to address lead with State approval: • Systems with lead P90 > 0.010 mg/L recommend CCT, LSLR, provision and maintenance of point-of-use (POU) devices, or replacement of all lead-bearing plumbing materials. • If the system's P90 lead level > 0.015 mg/L, the system must implement the compliance option.	Allows CWSs serving ≤ 3,300 persons and all NTNCWSs with P90 levels > lead action level and ≤ copper action level to conduct the following actions in lieu of CCT requirements to address lead with State approval: • Choose a compliance option: (1) provision and maintenance of POU devices or (2) replacement of all lead-bearing plumbing materials. • Removes the compliance option to conduct LSLR in 15 years. Maintains option for systems following CCT requirements: • With CCT: Collect WQPs and evaluate compliance options and OCCT. • No CCT: Evaluate compliance options and CCT.
Public Education and Outreach		
• Systems with P90 > lead action level must provide PE to customers about lead sources, health effects, measures to reduce lead exposure, and additional information sources. • Systems with P90 > lead action level must offer lead tap sampling to customers who request it. • Systems must provide lead consumer notice to individuals served at tested taps within 30 days of learning results. • For water systems serving a large proportion of consumers with limited English proficiency, PE materials must contain information in the appropriate language(s) regarding the importance of the materials or information on where consumers can get a translated copy or assistance in other languages.	• Water systems must provide updated lead health effects language in PN and PE materials. CWSs must provide updated health effects language in the Consumer Confidence Reports (CCR). • For water systems serving a large proportion of consumers with limited English proficiency, PE materials must contain information in the appropriate language(s) regarding the importance of the materials or information on where consumers can get a translated copy or assistance in other languages. • If P90 > lead action level: ○ LCRR PN and LCR PE requirements apply. ○ Water systems must offer to sample the tap for lead for any customer who requests it. • Water systems must provide the lead consumer notice to consumers whose individual tap sample is >0.015 mg/L lead as soon as practicable but no later than 3 calendar days. • CWSs must provide information to local and State health agencies.* Also see the *Public Notification, Consumer Confidence Report,* and *LSL-Related Outreach* sections of this exhibit.	• Revises the mandatory lead health effects language to improve completeness and clarity. • Water systems must provide the updated health effects language in PN and all PE materials. CWSs must provide updated health effects language in the CCR. • For water systems serving a large proportion of consumers with limited English proficiency, all PE materials must contain information in the appropriate language(s) regarding the importance of the materials and information on where consumers can get a translated copy or assistance in other languages. • Water systems must deliver consumer notice of lead and copper tap sampling results to consumers whenever their tap is sampled as soon as practicable but no later than 3 business days after receiving the results, regardless of the level. • If P90 > lead action level: ○ LCRR PN requirements apply. ○ Water systems must conduct PE no later than 60 days after the end of each tap sampling period until the system no longer exceeds the action level unless the State approves an extension. ○ Water systems must deliver PE materials to bill paying customers and every service connection address served. • Water systems with multiple lead action level exceedances (at least 3 action level exceedances in a 5-year period) must conduct additional public outreach activities and make filters available. Water systems must submit a filter distribution plan to the State within 60 days of the second action level exceedance, and the State will have 60 days to review. The State has discretion to allow the system to discontinue outreach activities and filter provision earlier if it completes actions to reduce lead levels. • Water systems must offer to sample the tap for lead for any consumer with a lead, GRR, or unknown service line who requests it. Also see the *Public Notification, Consumer Confidence Report,* and *Service Line Related Outreach* sections of this exhibit.

EXHIBIT 1—COMPARISON OF THE 2021 LCRR, PROPOSED LCRI, AND FINAL LCRI REQUIREMENTS—Continued

Pre-2021 LCR	2021 LCRR	Final LCRI
Public Notification		
• If P90 > action level: ○ No PN required for P90 > action level. • Tier 2 PN required for violations to §§ 141.80 through 141.85. • Tier 3 PN required for violations to §§ 141.86 through 141.89. Also see the *Public Education and Outreach* section of this exhibit.	• If P90 > lead action level: ○ Systems must notify consumers of P90 > action level within 24 hours (Tier 1 PN). Systems must comply by October 16, 2024. • Tier 2 PN required for violations to §§ 141.80 (except paragraph (c)) through 141.84, 141.85(a) through (c) and (h), and 141.93. • Tier 3 PN required for violations to §§ 141.86 through 141.90. Also see the *Public Education and Outreach* section of this exhibit.	• If P90 > lead action level of 0.010 mg/L: ○ LCRR Tier 1 PN requirements apply, but for the LCRI action level of 0.010 mg/L. • Tier 2 PN required for violations to §§ 141.80 (except paragraph (c)) through 141.84, 141.85(a) through (c) (except paragraph (c)(3)), (h), and (j), and 141.93. • Tier 3 PN required for violations to §§ 141.86 through 141.90 and 141.92. • Water systems must provide updated lead health effects language in PN. Also see the *Public Education and Outreach* section of this exhibit.
Consumer Confidence Report		
• All CWSs must provide educational material in the annual CCR.	• CWSs must provide updated health effects language in the CCR. • All CWSs are required to include information on how to access the LSL inventory and how to access the results of all tap sampling in the CCR. • Revises the mandatory health effects language to improve accuracy and clarity.	• Revises the mandatory lead health effects language and informational statement as well as includes additional information about risk of lead exposure in the informational statement about lead in the CCR to improve completeness and clarity. • CWSs must provide updated health effects language in the CCR. • CWSs must include a statement in the CCR about the system sampling for lead in schools and child care facilities and direct the public to contact their school or child care facility for further information. • CWSs with lead, GRR, or unknown service lines must include a statement in the CCR about how to access the service line inventory and replacement plan. Also see the *Public Education and Outreach* section of this exhibit.
Change in Source or Treatment		
Systems on a reduced tap monitoring schedule must obtain prior State approval before changing their source or treatment.	Systems on any tap monitoring schedule must obtain prior State approval before changing their source or treatment. These systems must also resume a standard lead and copper tap monitoring schedule.*	No changes from the LCRR.
Source Water Monitoring and Treatment		
Periodic source water monitoring for lead and copper is required for systems with: • Source water treatment; or • P90 > action level and no source water treatment.	States can waive continued source water monitoring for lead and copper if the:* • System has already conducted source water monitoring for a previous P90 > action level; • State has determined that source water treatment is not required; and • System has not added any new water sources.	Updated cross-reference to requirement for conducting standard monitoring when there is a source water addition.
Lead in Drinking Water at Schools and Child Care Facilities		
• Does not include separate testing and education program for CWSs at schools and child care facilities. • Schools and child care facilities that are classified as NTNCWSs must sample for lead and copper.*	• CWSs must provide annual public education materials to all schools and licensed child care facilities they serve. • CWSs must conduct sampling at 20 percent of elementary schools and 20 percent of licensed child care facilities they serve per year and conduct sampling at secondary schools on request for first testing cycle (5 years) and conduct sampling on request of all schools and child care facilities thereafter. • Sample results must be provided to each sampled school/child care facility, State, and local or State health department. • Excludes schools and licensed child care facilities constructed on or after January 1, 2014. • Waives sampling in schools and child care facilities that were sampled under a State or other program after October 16, 2024.	Expands on LCRR requirements to include: • Waivers for CWSs to sample in schools and licensed child care facilities they serve during the first 5-year testing cycle if the facility has been sampled between January 1, 2021, and the LCRI compliance date. • Requires CWSs to include a statement about the opportunity for schools and licensed child care facilities to be sampled in the CCR. • Excludes schools and licensed child care facilities constructed or that had full plumbing replacement on or after January 1, 2014 and that are also not served by a lead, GRR, or unknown service line. • Includes clarifications on the applicability of the requirements and on the content of public education material CWSs must provide to schools and licensed child care facilities.

EXHIBIT 1—COMPARISON OF THE 2021 LCRR, PROPOSED LCRI, AND FINAL LCRI REQUIREMENTS—Continued

Pre-2021 LCR	2021 LCRR	Final LCRI
Primary Agency (or State) Requirements		
States must report information to the EPA that includes, but is not limited to: • All P90 lead levels for systems serving > 3,300 persons, and only levels > 0.015 mg/L for smaller systems. • Only copper P90 levels above the copper action level for all systems. • Systems that are required to initiate LSLR and the date replacement must begin. • Systems for which OCCT has been designated. States must keep records on information that includes, but is not limited to: • Records of the currently applicable or most recent State determinations, including all supporting information and an explanation of the technical basis for each decision. State primacy requirements include, but are not limited to: • Designating OCCT. • Designating source water treatment methods. • Verifying service line replacement schedules.	States must report information to the EPA that includes, but is not limited to: • All lead and copper P90 levels for all system sizes.* • The number of lead, GRR, and unknown service lines for every water system.* • The goal-based or mandatory replacement rate and the date each system must begin LSLR. • OCCT status of all systems including OWQPs specified by the State.* • For systems triggered into source water treatment, the State-designated date or determination for no treatment required.* States must keep records on information that includes, but is not limited to: • LSLR plans.* • Compliance sampling pools.* • Determinations related to source water treatment.* • Determinations related to compliance alternatives for small CWSs and NTNCWSs.* • LSL inventories.* State primacy requirements include, but are not limited to: • Reviewing service line inventory.* • Approving LSLR goals.* • Determining if a faster LSLR rate is feasible.* • Defining school and child care program and determining if State or local testing program is at least as stringent as Federal requirements. • Verifying compliance with ''Find-and-Fix'' requirements.* • Reviewing any change in source water treatment.*	States must report information to the EPA that includes, but is not limited to: • The current numbers of lead, GRR, unknown, and non-lead service lines, lead connectors, and unknown connectors in each system's inventory. • The numbers and types of service lines replaced and the replacement rate for every system conducting mandatory service line replacement. • The deadline for the system to complete replacement of all lead and GRR service lines. • The expected date of completion of service line replacement. • The lead P90 levels of systems with an action level exceedance within 15 days of the end of the monitoring period or, if earlier, within 24 hours of receiving the notice from the system. • The result of the State's determination as to whether the deferred deadline is the fastest feasible, the deadline at the fastest feasible rate, and the reasons for the State's decision. States must keep records on information that includes, but is not limited to: • Samples that do not meet the six-hour minimum stagnation time. • Determinations concerning systems eligible for deferred deadlines for service line replacement. State primacy requirements include, but are not limited to: • Identify State laws that pertain to a water system's access to conduct full service line replacement. • Make determinations about systems eligible for service line replacement deferred deadlines. • Make determinations about which water systems serve a large proportion of consumers with limited English proficiency and provide technical assistance to those systems required to meet the requirements to provide translated PE or translation assistance to their consumers. • Review and approve inventory validations.

[a] See section IV.B.4 of this preamble for further information on cost sharing.
Note: P90 means 90th percentile level.

B. Does this action apply to me?

The entities regulated by this action are CWSs and non-transient non-community water systems (NTNCWSs). A CWS, as defined in § 141.2, is ''a public water system which serves at least fifteen service connections used by year-round residents or regularly serves at least twenty-five year-round residents.'' The definition in § 141.2 for a NTNCWS is ''a public water system that is not a [CWS] and that regularly serves at least 25 of the same persons over 6 months per year.'' The following table provides examples of the regulated entities under this rule:

Category	Examples of potentially affected entities
Public water systems	CWSs; NTNCWSs.
State and Tribal government agencies	Agencies responsible for developing, ensuring compliance with, and enforcing National Primary Drinking Water Regulations (NPDWRs).

This table is not intended to be exhaustive, but rather provides a guide for readers regarding entities that could be affected by this action. This table includes the types of entities that the EPA is now aware could potentially be regulated by this action. To determine whether your entity is regulated by this action, this final rule should be carefully examined.

As part of this action for the LCRI, ''State'' refers to the agency of the State, Tribal, or territorial government that has jurisdiction over public water systems consistent with the definition of ''State'' in 40 CFR 141.2. During any period when a State or Tribal government does not have primary enforcement responsibility pursuant to section 1413 of the Safe Drinking Water Act (SDWA), the term ''State'' means the relevant Regional Administrator of the EPA. For questions regarding the applicability of this action to a particular entity, consult the person listed in the **FOR FURTHER INFORMATION CONTACT** section.

C. Dates for Compliance

Water systems must begin to comply with the LCRI three years after promulgation of this final rule. In accordance with SDWA section 1412(b)(10), the Administrator, or a State (in the case of an individual system), may allow up to two additional years to comply with a treatment technique if the Administrator or State (in the case of an individual system) determines that additional time is necessary for capital improvements. Where a State, or the EPA where it has

primacy, chooses to provide such an extension, the system would have up to five years from the rule's promulgation date to begin compliance with the treatment technique. The EPA is not providing a two-year extension nationwide because the EPA has not determined that an additional two years is necessary for water systems nationwide to complete capital improvements to begin compliance with the LCRI. Starting on the compliance date, systems must begin mandatory service line replacement programs that must be completed within 10 years for the vast majority of systems. Systems must also begin conducting the improved tap sampling and if their tap sampling results show they exceeded the action level, systems may be required to install new or re-optimized corrosion control treatment.

Under SDWA section 1416, States may exempt water systems from any treatment technique requirement for no more than three years after the otherwise applicable compliance date. For a small system that does not serve more than 3,300 persons and which needs financial assistance for the necessary improvements, an exemption may be renewed for one or more two-year periods, but not to exceed a total of six years. No exemption may be granted without a finding that:

- Due to compelling factors (which may include economic factors, including qualification of the public water system as a system serving a disadvantaged community pursuant to SDWA section 1452(d)),[4] the public water system is unable to comply with such contaminant level or treatment technique requirement, or to implement measures to develop an alternative source of water supply;
- The public water system was in operation on the effective date of such contaminant level or treatment technique requirement, or, for a system that was not in operation by that date, only if no reasonable alternative source of drinking water is available to such new system;
- The granting of the exemption will not result in an unreasonable risk to health; and
- Management or restructuring changes (or both) cannot reasonably be made that will result in compliance with this title, or if compliance cannot be achieved, improve the quality of the drinking water.

[4] The term ''disadvantaged community'' used in SDWA section 1416 here refers to the statutory definition of ''disadvantaged community'' provided at SDWA section 1452(d)(3): ''[T]he term 'disadvantaged community' means the service area of a public water system that meets affordability criteria established after public review and comment by the State in which the public water system is located. The Administrator may publish information to assist States in establishing affordability criteria.''

III. Background

A. Overview of Lead and Lead Exposures Through Drinking Water

Lead is toxic to humans and animals, causing harmful health effects. Lead is a naturally occurring element found in small amounts in the Earth's crust. Lead and lead compounds have been used in a wide variety of products found in and around homes, including paint, ceramics, pipes and plumbing materials, solders, gasoline, batteries, ammunition, and cosmetics. Lead can enter drinking water when plumbing materials that contain lead corrode, especially where the water is highly acidic or has a low mineral content that is more likely to corrode pipes and fixtures. The most common sources of lead in drinking water are lead pipes, faucets, and fixtures. In homes with lead pipes that connect the home to the water main (or other conduit for distributing water to individual consumers or groups of consumers), also known as lead service lines or LSLs, these pipes are typically the most significant source of lead in water (Sandvig et al., 2008). Lead pipes are more likely to be found in older cities and homes built before 1986 (Laquatra, 2014). Among homes without LSLs, the most common source of lead in drinking water is from brass or chrome-plated brass faucets and plumbing with lead solder (Laquatra, 2014).

The LCRI regulates approximately 67,000 community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) in the United States of varying sizes and containing varying numbers of LSLs in their service area. A CWS is a public water system that supplies water to the same population year-round. A NTNCWS is a public water system that regularly supplies water to at least 25 of the same people at least six months per year. Some examples are schools, factories, office buildings, and hospitals which have their own water systems.

B. Human Health Effects of Lead and Copper

1. Lead

Exposure to lead can cause harmful health effects for people of all ages, especially pregnant people, infants, and young children (Centers for Disease Control and Prevention (CDC), 2022a; CDC, 2022b; CDC, 2023). Lead has acute and chronic impacts on the body. Lead exposure causes damage to the brain and kidneys and can interfere with the production of red blood cells that carry oxygen to all parts of the body (Agency for Toxic Substances and Disease Registry (ATSDR), 2020).

Developing fetuses, infants, and young children are most susceptible to the harmful health effects of lead (ATSDR, 2020). Exposure to lead is known to present serious health risks to the brain and nervous system of children (USEPA, 2013; USEPA, 2024b). Young children and infants are particularly vulnerable to the physical, cognitive, and behavioral effects of lead due to their sensitive developmental stages. There is no known safe level of exposure to lead. Scientific studies have demonstrated that there is an increased risk of health effects in children even when their blood lead levels are less than 3.5 micrograms per deciliter (CDC, 2022c) and in adults even when blood lead levels are less than 10 micrograms per deciliter (National Toxicology Program (NTP), 2012). Low-level lead exposure is of particular concern for children because their growing bodies absorb more lead per pound than adults do, and their developing brains and nervous systems are more sensitive to the damaging effects of lead (ATSDR, 2020).

The United States Environmental Protection Agency (EPA) estimates that drinking water can make up at least 20 percent of a person's total exposure to lead (56 FR 26548, USEPA, 1991). When a child is not routinely exposed to other sources of lead (*e.g.,* dust from legacy lead paint or legacy contaminated soils), most of their exposure may come from drinking water. Infants who consume mostly formula mixed with tap water can, depending on the level of lead in the water and other sources of lead in the home, receive 40 to 60 percent of their exposure to lead from drinking water used in the formula (53 FR 31516, USEPA, 1988; Stanek et al., 2020). Scientists have linked lead's effects on the brain with lowered intelligence quotient (IQ) and attention disorders in children, among other health impacts (USEPA, 2024b; USEPA, 2013; Lanphear et al., 2019; Ji et al., 2018). In 1991, the EPA established a maximum contaminant level goal (MCLG) for lead of zero. The Safe Drinking Water Act (SDWA) requires the EPA to set MCLGs at the level at which no known or anticipated adverse effects on the health of persons would occur, allowing for a margin of safety. The EPA established the MCLG of zero in part due to lead being a probable carcinogen and due to there being no clear threshold below which there are no risks of some non-

carcinogenic health effects (56 FR 26460, USEPA, 1991).

Blood lead levels are an indication of current exposure. Over time, lead can accumulate in the body. Lead is stored in a person's bones, binding to calcium, and it can be released later in life. For example, when calcium is mobilized in the pregnant person's body during pregnancy, lead is released from the pregnant person's bones and can pass to the fetus. Lead can also be passed through breastmilk to the nursing infant or child. Lead exposure can result in serious health effects to the developing fetus and infant. Studies document increased risk of miscarriage (Xu et al., 2012; Tolunay et al., 2016), low birth weight (Goto et al., 2021; Hu et al., 2021; Rodosthenous et al., 2017; Taylor et al., 2015), and preterm birth (USEPA, 2024b; Fisher et al., 2023). In utero and early childhood exposure to lead is associated with increased risk to the baby's brain and/or nervous system, manifesting as, for instance, an increased risk of learning or behavioral problems in life (USEPA, 2024b; USEPA, 2013).

As noted above, studies also have documented an association between adult blood lead levels and increased risk of cardiovascular disease, manifesting as an increase in risk of cardiovascular disease premature mortality. Occupational exposure to lead is associated with significant health effects in adults as well, particularly renal and gastrointestinal. The 2013 and 2024 Integrated Science Assessments for Lead (USEPA, 2013; USEPA, 2024b), the U.S. Department of Health and Human Services (HHS) National Toxicology Program (NTP) Monograph on Health Effects of Low-Level Lead (NTP, 2012), the Agency for Toxic Substances and Disease Registry (ATSDR) 2020 Toxicological Profile for Lead (ATSDR, 2020), and peer-reviewed studies have documented associations between lead and cancer (Wei and Zhu, 2020) as well as lead and adverse cardiovascular (Park and Han, 2021), renal (Harari et al., 2018), reproductive (Shi et al., 2021; Lee et al., 2020), immunological (Krueger and Wade, 2016), and neurological effects (Andrew et al., 2022). The EPA's Integrated Science Assessment for Lead (USEPA, 2024b) and Integrated Risk Information System (IRIS) Chemical Assessment Summary (USEPA, 2004a) provide additional health effects information on lead. For a more detailed explanation of the health effects associated with lead for children and adults, see appendix D of the final Lead and Copper Rule Improvements (LCRI) Economic Analysis (USEPA, 2024a).

2. Copper

Copper is an essential trace element required for several metabolic processes; however, excess copper intake is toxic and linked to various adverse health effects. Acute gastrointestinal conditions are the most common adverse health effects observed among adults and children. Chronic exposure to copper is particularly a concern for people with Wilson's disease, an autosomal recessive genetic disorder of copper metabolism affecting 1 in 30,000 individuals (Ala et al., 2007). These individuals are prone to copper accumulation in body tissue, which can lead to liver damage, neurological, and/or psychiatric symptoms (Dorsey and Ingerman, 2004). Additional information on the health effects associated with copper are available in appendix E of the Final LCRI Economic Analysis (USEPA, 2024a).

C. Regulatory History

Exercising its longstanding authority under SDWA, on June 7, 1991, the EPA promulgated the Lead and Copper Rule (LCR) with the goal of improving public health by reducing lead and copper levels at consumer taps (56 FR 26460, USEPA, 1991). The LCR established MCLGs of 0 mg/L for lead and 1.3 mg/L for copper. In addition, the LCR established a National Primary Drinking Water Regulation (NPDWR) consisting of treatment technique requirements that include lead service line replacement (LSLR), corrosion control treatment (CCT), source water treatment, and public education. The LCR established requirements for community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) to conduct monitoring at consumer taps. The rule established action levels of 0.015 mg/L for lead and 1.3 mg/L for copper. If more than 10 percent of tap sample results (*i.e.,* the 90th percentile value of tap sample concentrations), collected during any monitoring period, exceed the action level, water systems must take actions including installing and/or optimizing CCT, conducting public education, treating source water if it contributes to lead and copper levels at the tap, and replacing LSLs if the system continues to exceed the action level after completing CCT steps and installing CCT. An action level exceedance is not a violation of the rule; however, failure to take the subsequent required actions (*e.g.,* LSLR, CCT, public education) results in a violation of the treatment technique or monitoring and reporting requirements.

On January 12, 2000, the EPA promulgated minor revisions to the LCR (LCRMR) (65 FR 1950, USEPA, 2000a). These minor revisions streamlined the LCR, promoted consistent national implementation, and reduced the reporting burden on affected entities. The LCRMR did not change the MCLGs or action levels for lead and copper nor change the rule's basic requirements. One of the provisions of the LCRMR required States to report the 90th percentile lead value for all water systems serving greater than 3,300 persons. States were required to report the 90th percentile lead value for water systems serving 3,300 or fewer persons only if the water system exceeds the action level. The new reporting requirements became effective in 2002.[5]

From 2000 to 2004, the District of Columbia experienced incidences of elevated drinking water lead levels, prompting the EPA to undertake a review of the LCR to determine ''whether elevated drinking water lead levels were a national problem'' and to identify actions to improve rule implementation (72 FR 57784, USEPA, 2007a; USEPA, 2007b; Brown et al., 2011). The EPA specifically considered the number of systems that failed to meet the lead action level, if a significant percentage of the population received water that exceeded the action level, how well the LCR worked to reduce drinking water lead levels, and if the rule was being effectively implemented, particularly with respect to monitoring and public education requirements. As part of the national review, the EPA held four expert workshops to discuss elements of the LCR, collected and evaluated lead concentration data and other information required under the LCR, and evaluated State implementation efforts to better understand challenges and needs experienced by States and water systems. In March 2005, the EPA released a Drinking Water Lead Reduction Plan, outlining a series of short- and long-term goals to improve implementation of the LCR, including revisions to the LCR (USEPA, 2005). On October 10, 2007, the EPA promulgated a set of short-term regulatory revisions and clarifications (72 FR 57782, USEPA, 2007a). The short-term revisions strengthened implementation of the LCR in the areas of monitoring, treatment, customer awareness, LSLR, and improving compliance with the public education requirements.

[5] In 2004, the EPA published minor corrections to the LCR to reinstate text that was inadvertently removed from the rule during the previous revision (69 FR 38850, USEPA, 2004b).

Long-term issues, requiring additional research and input, were identified for a subsequent set of rule revisions. The EPA conducted extensive engagement with stakeholders to inform subsequent rule development, including a 2011 Scientific Advisory Board (SAB) consultation on the science of partial LSLR that found that partial LSLR does not reliably reduce drinking water lead levels in the long term and may cause short-term elevated drinking water lead levels following the replacement (USEPA, 2011a). The EPA specifically sought input from small entity stakeholders through the Small Business Advocacy Review Panel (SBAR) process under section 609(b) of the RFA, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA). The EPA also requested that the National Drinking Water Advisory Council (NDWAC) form a Working Group in 2014 to provide advice to the NDWAC as it develops recommendations for the revisions to the LCR (NDWAC, 2015). In 2016, the EPA released a white paper summarizing NDWAC recommendations and identifying key areas for rule development, noting that ''lead crises in Washington, DC, and in Flint, Michigan, and the subsequent national attention focused on lead in drinking water in other communities, have underscored significant challenges in the implementation of the current rule, including a rule structure that for many systems only compels protective actions after public health threats have been identified'' (USEPA, 2016a). Notably, the white paper discussed the issue of mandatory, proactive LSLR as an opportunity to eliminate a primary source of lead in drinking water rather than only replacing LSLs after a lead action level exceedance, and how to address lead exposure risks resulting from partial LSLR. The recommendations also emphasized the importance of enforceable goals for LSLR, recognizing the significant lead exposure risks that can accompany partial service line replacements. Other issues identified include the need for stronger CCT requirements, including re-evaluation after source water or treatment changes, improved tap sampling procedures to address concerns about practices used to avoid action level exceedances, and increased public transparency such as access to information about LSLs and sharing of data.

The EPA intended to address these long-term issues in the 2021 Lead and Copper Rule Revisions (LCRR), which was promulgated on January 15, 2021 (86 FR 4198, USEPA, 2021a). The 2021 LCRR focuses on six key areas for revision: identifying sites with significant sources of lead in drinking water, strengthening CCT requirements, closing loopholes in LSLR requirements, increasing sampling reliability, improving risk communication, and introducing a new lead sampling requirement at schools and child care facilities as part of public education. Specifically, the 2021 LCRR includes new requirements for water systems to develop, and make publicly accessible, LSL inventories and annually notify consumers if they are served by an LSL, GRR service line, or service line of unknown material. Additionally, the 2021 LCRR removes provisions allowing partial service line replacement or ''test-outs'' (*i.e.,* where a service line sample measures below the lead action level) to count towards LSLR requirements. The rule also revises monitoring requirements to prioritize sampling at sites most likely to contain lead sources, require a fifth-liter sample be taken at LSL sites, and prohibit the use of language in sampling instructions that may result in samples that underestimate lead levels.

The 2021 LCRR also establishes a lead trigger level at 0.010 mg/L to require systems to take actions before an action level exceedance, including taking steps to plan for CCT installation, re-optimizing CCT if the system already installed CCT, establishing a goal-based LSLR program, and increasing monitoring frequency. The 2021 LCRR makes several changes to the CCT requirements and establishes a requirement for water systems to conduct follow-up actions at sites with individual compliance sample concentrations exceeding 0.015 mg/L.

In the 2021 LCRR, the EPA also revised its Public Notification (PN) Rule in 40 CFR part 141, subpart Q, to make changes to the reporting requirements for action level exceedances. These changes implemented the 2016 amendments to section 1414 of SDWA that required public notification within 24 hours if the system exceeds the lead action level. In the 2021 LCRR, the EPA also revised the Consumer Confidence Report (CCR) Rule in 40 CFR part 141, subpart O, to require the report to include the range of lead and copper tap sampling results and information on how to access lead tap sampling results and the service line inventory. The EPA also revised the mandatory lead health effects language and informational statement about lead that must be included in the CCR.

The 2021 LCRR adds new public education requirements, including requirements to notify persons served by a known or suspected LSL and timely (24 hour) notification of individuals when their lead tap sampling results exceed the lead action level of 0.015 mg/L. The 2021 LCRR also requires systems above the trigger level to conduct goal-based LSLR and also to conduct additional public outreach activities about lead in drinking water and opportunities to replace LSLs if the system fails to meet the goal replacement rate established after a trigger level exceedance.

The 2021 LCRR also adds a new small system flexibility provision for CWSs serving 10,000 or fewer persons and all NTNCWSs. Those systems that exceeded the trigger level can choose one out of four compliance options (*i.e.,* CCT, LSLR, point-of-use devices, replacement of lead-bearing plumbing) to implement if the system exceeds the lead action level.

On January 20, 2021, President Joseph R. Biden issued Executive Order 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (86 FR 7037, January 20, 2021). Executive Order 13990 required Federal agencies to ''review and . . . take action to address the promulgation of Federal regulations and other actions during the last 4 years that conflict[ed] with'' the ''national objectives,'' as provided in the executive order, including to ''be guided by the best science and be protected by processes that ensure the integrity of Federal decision-making'' to promote and protect public health and advance environmental justice, among others. The EPA was required to review the LCRR because the EPA promulgated the LCRR within the time frame specified by the executive order, and the LCRR addresses public health through drinking water.

Additionally, after promulgation of the LCRR, the EPA heard from stakeholders on a range of concerns about the LCRR, including the lack of requirements or incentives to replace all LSLs, the inclusion of the trigger level that made the rule unnecessarily complicated, and the implementation burdens on systems and States.

To allow the EPA to engage with stakeholders and review the LCRR before it took effect, on March 12, 2021, the EPA published the ''National Primary Drinking Water Regulations: Lead and Copper Rule Revisions; Delay of Effective Date'' (86 FR 14003, USEPA, 2021c), which delayed the effective date of the LCRR from March 16, 2021, to June 17, 2021. On the same day, the EPA published the ''National Primary Drinking Water Regulations: Lead and

Copper Rule Revisions; Delay of Effective and Compliance Dates'' (86 FR 14063, USEPA, 2021d), which proposed further delaying the effective date of LCRR to December 16, 2021, to allow the EPA to ''conduct a review of the LCRR and consult with stakeholders, including those who have been historically underserved by, or subject to discrimination in, Federal policies and programs prior to the LCRR going into effect'' (86 FR 14063, USEPA, 2021d). On June 16, 2021, the EPA issued a final rule delaying the LCRR effective date to December 16, 2021, and the compliance date from January 16, 2024, to October 16, 2024, ''to maintain the same time period between the effective date and the compliance date in the LCRR'' (86 FR 31941, USEPA, 2021e).

As part of the LCRR review, the EPA held a series of virtual engagements from April to August 2021 to obtain public input on the LCRR. Consistent with Executive Order 13990, the EPA engaged with States, Tribes, water systems, the public, environmental advocates, and environmental justice organizations. The EPA also sought input from community stakeholders in places that have concerns due to lead in drinking water, particularly from individuals and communities that are most at-risk of exposure to lead in drinking water.

During this process, the EPA hosted a series of 10 virtual community roundtables with stakeholders in: Pittsburgh, PA; Newark, NJ; Malden, MA; Washington, DC; Newburgh, NY; Benton Harbor and Highland Park, MI; Flint and Detroit, MI; Memphis, TN; Chicago, IL; and Milwaukee, WI. Each roundtable included a range of participants representing local governments, community organizations, environmental groups, local public water utilities, and public officials. Participants shared their experiences with lead in their communities and provided the EPA with oral and written comments on the LCRR. The EPA also held a roundtable with representatives from Tribes and Tribal communities, a national stakeholder association roundtable, a national co-regulator meeting, two public listening sessions, and a meeting with organizations representing elected officials. Summaries of the meetings and written comments from the public can be found in the docket, EPA–HQ–OW–2021–0255 at *https://regulations.gov/*.

On December 17, 2021, the EPA published the results of the LCRR review (86 FR 71574, USEPA, 2021b). The EPA described the comments received as part of the public engagement efforts conducted as part of the LCRR review and determined that there are regulatory and non-regulatory actions the agency can take to reduce drinking water lead exposure. While the EPA found that the LCRR improved public health protection relative to the LCR, the agency also concluded that there are significant opportunities to further improve the rule to support the goal of proactively removing LSLs and protecting public health more equitably (86 FR 71574, USEPA, 2021b). The EPA also announced in the LCRR review that the effective date of the LCRR published on June 16, 2021, would continue to be December 16, 2021, to support near-term development of actions to reduce lead in drinking water (86 FR 71574, USEPA, 2021b). At the same time, the EPA committed to developing a new proposed rule, the LCRI, to strengthen key elements of the rule. The EPA identified the following policy objectives informed by the LCRR review: ''Replacing 100 percent of lead service lines is an urgently needed action to protect all Americans from the most significant source of lead in drinking water systems; equitably improving public health protection for those who cannot afford to replace the customer-owned portions of their LSLs; improving the methods to identify and trigger action in communities that are most at risk of elevated drinking water lead levels; and exploring ways to reduce the complexity of the regulations'' (86 FR 71574; USEPA, 2021b). The EPA also stated that it did not expect to propose changes to the requirements for information to be submitted in the initial LSL inventory or the associated October 16, 2024, compliance date. The EPA described the importance of maintaining this date, stating that ''continued progress to identify LSLs is integral to lead reduction efforts regardless of potential revisions to the rule. The inventory provides critical information on the locations of potentially high drinking water lead exposure within and across public water systems, which will allow for quick action to reduce exposure'' (86 FR 71579, USEPA, 2021b). Specifically, the EPA noted that development of inventories nationwide over the near-term would assist water systems, States, Tribes, and the Federal Government in determining the prevalence of these lead sources and would, among other things, enable water systems to begin planning for LSLR and apply for funding.

On December 6, 2023, the EPA published the proposed LCRI for public review and comment (84 FR 84878, USEPA, 2023a). The proposal included advancements in protecting people from the health effects from exposures to lead in drinking water. These advancements are based on the science and existing practices utilized by drinking water systems. Key provisions in the proposal include requiring virtually all water systems across the country to replace LSLs within 10 years, locating legacy lead pipes, improving tap sampling, lowering the lead action level, and strengthening protections to reduce exposure. The EPA proposed to retain the 2021 LCRR requirements and associated October 16, 2024, compliance date for the initial service line inventory; notifications to consumers served by a lead, galvanized requiring replacement (GRR), or lead status unknown service lines; Tier 1 public notification of a lead action level exceedance; and associated reporting requirements.

D. Statutory Authority

1. Establishment and Review of National Primary Drinking Water Regulations

The EPA is publishing revisions to the NPDWR for lead and copper under the authority of SDWA, 42 U.S.C. 300f *et seq.,* including sections 1412, 1413, 1414, 1417, 1445, and 1450. SDWA is the primary Federal law that protects the tap water provided to consumers by water systems across the country. Congress passed SDWA in 1974, responding to ''accumulating evidence that our drinking water contains unsafe levels of a large variety of contaminants.'' *Envtl. Def. Fund, Inc.* v. *Costle,* 578 F.2d 337, 339 (D.C. Cir. 1978). In passing SDWA, Congress intended to ensure ''that water supply systems serving the public meet minimum national standards for protection of public health.'' H.R. Rep. No. 93–1185, at 1 (1974), reprinted in 1974 U.S.C.C.A.N. 6454. The primary regulatory tool for this protection is section 1412 of SDWA under which the EPA is authorized to issue standards for drinking water served by water systems. These standards—entitled ''National Primary Drinking Water Regulations'' (NPDWRs)—are accompanied by ''maximum contaminant level goal[s]'' (MCLG), which are set, for each contaminant, at the level at which there are no known or anticipated adverse human health effects with an adequate margin of safety. 42 U.S.C. 300g–1(a)(3) and (b)(4). Lead and copper are subject to existing NPDWRs. Based on the health effects described above, in 1991, the EPA established the MCLG for lead at 0 mg/L, and the MCLG for copper at 1.3 mg/L.

SDWA section 1412(b)(9) states that ''The Administrator shall, not less often than every 6 years, review and revise, as appropriate, each national primary drinking water regulation promulgated under this subchapter. Any revision of a national primary drinking water regulation shall be promulgated in accordance with this section, except that each revision shall maintain, or provide for greater, protection of the health of persons.'' 42 U.S.C. 300g–1(b)(9). When the EPA promulgates a revised NPDWR, the agency follows the applicable procedures and requirements in section 1412 of SDWA, including those related to: (1) the use of best available, peer-reviewed science and supporting studies; (2) presentation of information on public health effects that is comprehensive, informative, and understandable; and (3) analysis of the health risk reduction benefits and costs. SDWA section 1412(b)(3)(A)–(C), 42 U.S.C. 300g–1(b)(3)(A)–(C).

2. Establishment of the Lead and Copper Rule as a Treatment Technique

Section 1412(b)(7)(A) of SDWA authorizes the EPA to ''promulgate a national primary drinking water regulation that requires the use of a treatment technique in lieu of establishing a maximum contaminant level, if the Administrator makes a finding that it is not economically or technologically feasible to ascertain the level of the contaminant.'' 42 U.S.C. 300g–1(b)(7)(A).

In accordance with SDWA section 1412(b)(7)(A), in 1991, the EPA promulgated the LCR, which established a treatment technique in lieu of a maximum contaminant level (MCL) for lead and copper (56 FR 26460, USEPA, 1991). The EPA's 1991 decision to promulgate a treatment technique rule for lead and copper instead of an MCL was upheld by the United States Court of Appeals for the District of Columbia Circuit. *American Water Works Association* v. *EPA,* 40 F.3d 1266, 1270–71 (D.C. Cir. 1994). For discussion on the EPA's findings and rationale supporting the agency's determination to continue to regulate lead and copper using a treatment technique rule, see section IV.A of this preamble.

3. Prevention of Adverse Health Effects to the Extent Feasible

In establishing treatment technique requirements, the Administrator is required to identify those treatment techniques ''which, in the Administrator's judgment, would prevent known or anticipated adverse effects on the health of persons to the extent feasible'' (SDWA section 1412(b)(7)(A)). ''Feasible'' is defined in section 1412(b)(4)(D) of SDWA as ''feasible with the use of the best technology, treatment techniques and other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration).'' Feasibility is based on the best technology, treatment techniques, or other means, that have been tested beyond the laboratory under full-scale conditions, as opposed to generally available technology; the technology need not be in widespread, full-scale use (SDWA section 1412(b)(4)(D)). Further, in selecting the best available technology, treatment techniques, and other means, the EPA evaluates the ability of the technology to reduce the level of the contaminant, and the technological and economic feasibility of the technologies being considered, as required under SDWA section 1412(b)(4)(D) (56 FR 26482, USEPA, 1991). In short, ''feasible'' in this context means technically possible and affordable. See SDWA section 1412 (b)(4)(D); *City of Portland* v. *EPA,* 507 F.3d 706 (D.C. Cir. 2007) (upholding the EPA's treatment technique rule for *Cryptosporidium* and the agency's interpretation that ''feasible'' means technically possible and affordable). Therefore, to meet the statutory standard, the EPA must evaluate three primary components for a treatment technique: (1) the effectiveness of a technology, treatment technique, or other means in reducing exposure to a contaminant to protect public health; (2) the affordability of the technology, treatment technique, or other means; and (3) whether the technology, treatment technique, or other means is technically possible. Each of these three components and the ''to the extent feasible'' standard in the statute are discussed in sequential order in this section.

First, SDWA requires the EPA to establish NPDWRs to protect public health to reduce exposure to drinking water contaminants. Notably, the public health protection goal for NPDWRs under SDWA is the same for a MCL and a treatment technique. SDWA requires the EPA set an MCL ''as close to the maximum contaminant level goal [MCLG] as is feasible'' (SDWA section 1412(b)(4)(B)). Because the MCLG is set at the level at which no known or anticipated adverse effects on the health of persons occur, SDWA's standard for a treatment technique rule—to ''prevent known or anticipated adverse effects on the health of persons to the extent feasible''—is essentially the same as the standard for an MCL (SDWA section 1412(b)(4)(A) and section 1412(b)(7)(A)). As Congress explained in SDWA legislative history, NPDWRs ''are to be protective of public health. While cost and technology are factors to be considered . . . the first priority of the Act is to protect human health by reducing or preventing human exposure to potentially harmful contaminants in drinking water.'' 1986 U.S.C.C.A.N. 1566, 1570, S. REP. 99–56 (1985). In establishing NPDWRs, where an agency action is based on science, SDWA directs the EPA to use the best available peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices, as well as data collected by accepted methods or best available methods (SDWA section 1412(b)(3)(A)).

Second, in evaluating feasibility under SDWA section 1412(b)(4)(D) and section 1412(b)(7)(A), the EPA also must ''take costs into consideration.'' The legislative history of this provision makes it clear that this aspect of feasibility is to be evaluated relative to ''what may reasonably be afforded by large metropolitan or regional public water systems'' (H.R. Rep. No. 93–1185 (1974), reprinted in 1974 U.S.C.C.A.N. 6454, 6471). See also S. Rep. No. 104–169, at 3 (1995) (feasibility is based on best available technology affordable to ''large'' systems).[6] The statutory framework for establishing an MCL or treatment technique rule also supports this approach of considering costs in determining the feasibility of an MCL or treatment technique rule. If the EPA cannot identify any affordable technologies for a particular category of small systems, the statute requires the EPA to identify variance technologies that ''achieve the maximum reduction or inactivation efficiency that is affordable'' and protective of public health (SDWA section 1412(b)(15)(A) and (B)). As a result, the EPA may not reject a treatment technique because it is unaffordable to small systems.

Third, with respect to the technical possibility[7] component of the feasibility standard, for lead and copper drinking

[6] Where the term ''affordable'' appears throughout the preamble to describe this aspect of the definition of ''feasible'' in SDWA section 1412(b)(4)(D), it refers to ''what may reasonably be afforded by large metropolitan or regional public water systems.''

[7] Note, given that the definition for ''feasible'' at SDWA section 1412(b)(4)(D) provides for the use of ''treatment techniques and other means'' in addition to ''technology,'' the terms ''technological'' and ''technical'' are used interchangeably herein for purposes of discussing feasibility to be more inclusive of the different types of treatment techniques that may be encompassed in a NPDWR.

water rules beginning with LCR, the EPA has consistently considered ''whether a technology has been shown to be effective'' by water systems and ''is compatible with other water treatment processes'' (56 FR 26482, USEPA 1991). The EPA has evaluated additional factors for lead and copper NPDWRs that may affect the ability of water systems to administer and implement rules, depending on the unique technologies, treatments, and other means available to reduce lead and copper in drinking water. Specifically, the EPA has historically considered other factors, such as the national availability of necessary capital improvement resources and supplies, labor, and specialized expertise, as supported by the best available information and the learned experiences and expertise from water systems, States, and other stakeholders. When promulgating a rule consisting of multiple treatment technique requirements, the EPA considers whether each treatment technique is feasible and whether implementation of the full suite of treatment techniques is feasible.

When the EPA assesses technical possibility, it may consider system size. In contrast to affordability, which is evaluated relative to only large metropolitan or regional water systems, the EPA evaluates technical possibility without that limitation. As previously stated, there is legislative history and case law that clearly provides Congress intended the statute to be technology-forcing and thus, that cost considerations were to be based on what is affordable only for large metropolitan or regional water systems. Absent any further limitation in SDWA, the best interpretation of the statute is to assess what is technically possible for treatment techniques by evaluating whether there are relevant, system-size-based considerations.

SDWA section 1412(b)(7)(A) also directs the EPA to evaluate the most stringent or health protective level for a treatment technique because treatment techniques must ''prevent known or anticipated adverse effects on the health of persons to the extent feasible.'' See *City of Portland* v. *EPA,* 507 F.3d 706 (D.C. Cir. 2007) (finding that SDWA requires the EPA to choose a treatment technique that is the most stringent feasible).

Interpreting the phrase ''prevent . . . to the extent feasible'' in this section to require treatment techniques provide the most health protection feasible accords with the plain text of SDWA section 1412(b)(7)(A), as well as SDWA section 1412 as a whole, and the associated legislative history. First, in 1974, the statute required the EPA to evaluate feasibility based on whether treatment techniques are ''generally available'' with cost taken into account based on ''what may reasonably be afforded by large metropolitan or regional public water systems. In 1986, however, ''generally available'' was changed to ''best available'' in the definition of feasibility, ''to assure that such standards reflect the full extent of current technology capability to move toward achievement of the health effects goal.'' 1986 U.S.C.C.A.N. 1566, 1570–71, S. REP. 99–56 (1985).

Second, SDWA specifies that the EPA may promulgate treatment techniques that are less stringent or health protective than feasible only in two narrow circumstances. The first such circumstance is SDWA section 1412(b)(5), under which the EPA may require the use of a treatment technique to achieve a contaminant level other than the feasible level if attaining the feasible level would result in an increase in the health risk posed by drinking water by increasing the concentration of other contaminants or by interfering with the efficacy of drinking water treatment techniques or processes that are used to comply with other NPDWRs. The second circumstance is SDWA section 1412(b)(6)(A), under which, if the EPA determines that the benefits of a treatment technique would not justify the costs of compliance, the EPA may promulgate a treatment technique for the contaminant that maximizes health risk reduction benefits at a cost that is justified by the benefits. As a result, interpreting ''prevent . . . to the extent feasible'' at SDWA section 1412(b)(7)(A) as anything other than what is the most stringent or health protective feasible level for a treatment technique would make these two statutory exemptions meaningless and unnecessary. See *City of Portland* v. *EPA,* 507 F.3d 706, 712 (D.C. Cir. 2007) (''But if 'feasible' meant that the technique's benefits justified its costs, [SDWA] section [1412](b)(6)(A)—which allows EPA to use cost-benefit analysis to set *less stringent standards than the most feasible*—would be surplusage.'' (Emphasis added)).

In summary, the best interpretation of the statutory standard for treatment techniques requires consideration of the terms used and defined in SDWA section 1412(b)(4) and section 1412(b)(7)(A), as described in this part of the preamble. Specifically, under SDWA section 1412(b)(7)(A), the EPA must prescribe the best available technologies, treatment techniques, or other means that are effective at preventing adverse health effects from lead and copper in drinking water to the greatest extent that are both affordable for large systems, and which are technically possible.

Beginning with the LCR in 1991, the EPA has consistently evaluated feasibility for this treatment technique rule in accordance with SDWA section 1412(b)(4) and section 1412(b)(7)(A). As the EPA explained in the preamble to the 1991 LCR, ''[t]he goal of this rule is to provide maximum human health protection by reducing the lead and copper levels at consumers' taps to as close to the MCLG as is feasible'' (56 FR 26478, USEPA, 1991). Each of the best available technologies, treatment techniques, and other means specified in the LCRI—service line replacement, CCT, and public education—prevent known or anticipated adverse health effects to the extent feasible.

Evaluating Feasibility for Each Treatment Technique

The LCRI is a treatment technique rule composed of four separate ''technologies, treatment techniques or other means,'' specifically: service line replacement, CCT, public education, and source water treatment.[8] The EPA chose this approach because multiple technologies, treatments, and other means are effective at reducing public health risks associated with lead and copper contamination in drinking water. Since the first proposed NPDWR for lead and copper, the LCR, in 1988, the EPA has evaluated a combination of treatment techniques to address lead contamination in drinking water, given the complexity inherent in lead contamination and the need for a multi-faceted approach to managing it (53 FR 31537, USEPA 1988; see section IV.A of this preamble about the characterization and complex nature of lead drinking water contamination). While the requirements for lead and copper NPDWRs have changed over time based on the best available information and the lived and learned experiences of water systems, communities, and States, these NPDWRs have maintained the same four treatment techniques for service line replacement, CCT, public education, and source water treatment.

Consistent with SDWA section 1412(b)(7)(A), the EPA evaluates feasibility at the level of a treatment technique, rather than evaluating the feasibility of each sub-element of a treatment technique (''the Administrator

[8] Note, the EPA is not including a discussion of feasibility for source water treatment, because it is not being amended by this final rule. For the EPA's feasibility determination for source water treatment, see the final LCR (56 FR 26482, USEPA 1991).

shall identify those *treatment techniques* which, in the Administrator's judgment, would prevent known or anticipated adverse effects on the health of persons to the extent feasible. Such regulations shall specify *each treatment technique* known to the Administrator *which meets the requirements of this paragraph,* but the Administrator may grant a variance from *any specified treatment technique* in accordance with section 300g–4(a)(3) of this title.'' (emphasis added)). The EPA reasonably followed the statutory standard to evaluate feasibility for ''each treatment technique . . . which meets the requirements'' at SDWA section 1412(b)(7)(A).

4. Notice and Recordkeeping Requirements

Section 1414(c)(1) of SDWA requires public water systems to provide public notice in certain specified situations, such as when the system has failed to comply with an applicable treatment technique requirement, or if the water system is subject to a variance or exemption. SDWA section 1414(c)(2) states that the Administrator ''shall by regulation . . . prescribe the manner, frequency, form, and content for giving notice.'' 42 U.S.C. 300g–3(c)(2). The EPA first promulgated the PN Rule in 2000 and subsequently revised it with the issuance of new or revised NPDWRs. This final rule includes revisions to the PN Rule related to the LCRI.

Section 1414(c)(1)(D) of SDWA, as amended by the Water Infrastructure Improvements for the Nation (WIIN) Act, requires public water systems to provide notice to the public if the water system exceeds the lead action level. 42 U.S.C. 300g–3(c)(1)(D). Section 1414(c)(2)(C) of SDWA specifies additional requirements related to the public notice if the action level exceedance has the potential to have serious adverse effects on human health as a result of a short-term exposure, including that the public notice must ''be distributed as soon as practicable, but not later than 24 hours'' after the water system learns of the action level exceedance, and that the system must report the exceedance to both the State and the Administrator within that same time period (42 U.S.C. 300g–3(c)(2)(C)(i) and (iii)). If a water system or State does not issue the required public notice for an exceedance of the lead action level, SDWA section 1414(c)(2)(D) directs the EPA to issue the required public notice ''not later than 24 hours after the Administrator is notified of the exceedance.''

In the final rule preamble for the 2021 LCRR, the EPA determined that a lead action level exceedance has the potential to have serious adverse health effects on humans as a result of short-term exposure (86 FR 4240, USEPA, 2021a). The EPA also explained that it interprets SDWA section 1414(c)(2)(C)(iii) to require systems to report only lead action level exceedances to the Administrator because the EPA does not have any obligation to issue a notice for other violations of drinking water standards in States with primacy, and therefore, the EPA does not need to be notified of those other situations.

SDWA section 1414(c)(4) requires the EPA to issue regulations to require each CWS to provide a periodic report to each customer of the system. The EPA first promulgated CCR regulations in 1998. (40 CFR part 141, subpart O) On May 24, 2024, the EPA promulgated significant revisions to the CCR Rule. (89 FR 45980, USEPA, 2024c) This final rule includes further revisions to the CCR Rule related to the LCRI.

SDWA section 1417(a)(2) provides that public water systems ''shall identify and provide notice to persons that may be affected by lead contamination of their drinking water'' where the contamination results from the lead content of the construction materials of the public water distribution system and/or corrosivity of the water supply sufficient to cause leaching of lead. Notice must be provided ''notwithstanding the absence of a violation of any national drinking water standard.'' 42 U.S.C. 300g–6(a)(2)(A)(i) and (ii). This rule requires water systems to identify, notify, and provide public education to persons when they are served by construction materials that contain may lead (lead, GRR, and unknown service lines) and when the corrosivity of the water supply is sufficient to cause leaching of lead.

SDWA section 1445(a) provides that every person who is subject to a requirement under SDWA or who is a grantee shall establish and maintain records, make reports, conduct monitoring, and provide information to the Administrator as reasonably required by regulation to assist the Administrator in establishing regulations under SDWA, in determining compliance with SDWA, in administering any financial assistance program under SDWA, in evaluating the health risks of unregulated contaminants, and in advising the public of such risks. In requiring public water systems to monitor under SDWA section 1445(a), the Administrator may take into consideration the system size and the contaminants likely to be found in the system's drinking water. 42 U.S.C. 300j–4(a).

5. Primacy Enforcement of National Primary Drinking Water Regulations

While the EPA always retains its independent enforcement authority, pursuant to SDWA section 1413(a), the agency may authorize States, Territories, and Tribes to have primary responsibility for administration and enforcement of primary drinking water regulations and related requirements applicable to public water systems within their jurisdiction (''primacy'').[9] Where the EPA has not approved primacy, the EPA implements the drinking water standards. The EPA may grant primacy when the agency determines that the State has adopted regulations that are no less stringent than the promulgated NPDWR, among other conditions. 42 U.S.C. 300g–2(a) and 40 CFR part 142. At this time, 49 States and the Navajo Nation have primary enforcement responsibility for public water systems in their jurisdictions.

To retain primary enforcement responsibility for public water systems, States must adopt regulations that are no less stringent than any new or revised NPDWRs promulgated in 40 CFR part 141 and request the EPA to approve a program revision. States must submit complete and final applications for approval of a program revision no later than two years after promulgation of the new or revised regulation unless the EPA grants the State a two-year extension. The EPA must approve or deny complete and final State primacy applications within 90 days of submission to the EPA. See 42 U.S.C. 300g–2(b)(2) and 40 CFR 142.12(d). In some cases, a State that has an approved primacy program for each existing NPDWR may qualify for interim primary enforcement authority for a new or revised NPDWR while the EPA's decision on the primacy application is

[9] For purposes of simplicity in this preamble, the term ''primacy agencies'' and ''States'' are used interchangeably to refer to States, Tribes, and Territories with primacy, and the Regional Administrator of EPA, where the EPA is acting as the primacy agency. The term ''State'' is defined in 40 CFR 141.2 to mean the agency of the State or Tribal government which has jurisdiction over public water systems. During any period when a State or Tribal government does not have primary enforcement responsibility pursuant to section 1413 of SDWA, the term ''State'' means the Regional Administrator, U.S. Environmental Protection Agency. The term ''State'' is defined in 40 CFR 142.2 to include one of the States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Commonwealth of the Mariana Islands, the Trust Territory of the Pacific islands, or an eligible Indian Tribe.

pending. See 42 U.S.C. 300g–2(c) and 40 CFR 142.12(e). SDWA section 1413(b)(1) requires the EPA to establish regulations governing the primacy application and review process ''with such modifications as the Administrator deems appropriate.'' In addition to revisions to the NPDWR for lead and copper, the CCR Rule, and the PN Rule, this final rule includes changes to the primacy requirements related to this rule.

SDWA section 1450 authorizes the Administrator to prescribe such regulations as are necessary or appropriate to carry out the Administrators functions under the Act. 42 U.S.C. 300j–9.

E. Anti-Backsliding Analysis of LCRI Relative to LCR and LCRR

Section 1412(b)(9) of SDWA is known as the ''anti-backsliding'' provision. Under this provision, the EPA is required to ensure that ''each revision'' of a national primary drinking water regulation ''shall maintain, or provide for greater, protection of the health of persons.'' The EPA has analyzed this rule against this standard using a framework that gives meaning to the text, structure, and purpose of the anti-backsliding provision, and is the best reading of the statutory provision. The term ''each revision'' is naturally read to refer to a revision of a ''national primary drinking water regulation,'' meaning that each new rule that revises the older regulation, shall maintain, or provide for greater health protection. The plain meaning of ''revision'' is broad in scope and contemplates that one revision may contain multiple parts. The word ''revision'' is defined as ''[t]he action or an act of revising something; critical or careful examination or perusal of a text, judgment, code, etc., with a view to making corrections, amendments, or improvements.'' Revision, definition 2.a. (in the context of a legal change), Oxford English Dictionary (3d ed. 2010). Thus, when analyzing whether ''each revision'' allows for backsliding, SDWA section 1412(b)(9)'s plain meaning asks the EPA to compare the whole of a new rule (*i.e.,* the ''revision'' at issue) against the whole of the prior rule to assess whether the revision maintains or improves upon health protections.

This is particularly true for a treatment technique regulation. A treatment technique rule is not centered on a single compliance level, but rather on an integrated set of actions designed to reduce the overall level of exposure to a contaminant. Therefore, in assessing whether a new treatment technique rule maintains or provides for greater health protection relative to the existing rule, the EPA evaluates the treatment technique rule as a whole, not on a component-by-component or provision-by-provision basis. As described in the 2021 LCRR rulemaking, the backsliding analysis for a treatment technique rule is ''based on an assessment of public health protection as a result of implementation of a rule as a whole, rather than a comparison of numerical benchmarks within the treatment technique rule'' (86 FR 4216, USEPA, 2021a). Therefore, when analyzing the LCRI against the anti-backsliding standard, the EPA assessed the level of public health protection resulting from implementation of the whole of the final LCRI (*i.e.,* the ''revision''). Because water systems are required to comply with the LCR until October 16, 2024, when water systems would have been required to comply with the 2021 LCRR in the absence of the LCRI, the EPA conducted two anti-backsliding analyses to compare the LCRI against the whole of the LCR and then separately against the whole of the 2021 LCRR to assess whether the new rule will maintain or improve public health protection relative to both prior baselines.

The EPA has found the final LCRI will improve public health protection over either the LCR or 2021 LCRR in accordance with SDWA section 1412(b)(9). Below is a more detailed breakdown of some of the most significant components that make the LCRI, as a whole, more protective than either the LCR or 2021 LCRR. The central feature of the LCRI is the mandatory replacement of lead and GRR service lines regardless of a water system's 90th percentile lead level. This is a more health protective approach relative to either the LCR or 2021 LCRR baseline because removing lead and GRR service lines eliminates a significant source of lead from the distribution system. Replacing lead and GRR service lines has been shown to significantly reduce lead levels in drinking water (Camara et al., 2013; Deshommes et al., 2018; Trueman et al., 2016), which improves public health by reducing the associated health impacts from lead exposures.

The LCR only requires water systems to replace LSLs systemwide if a system exceeds the lead action level and allows them to stop replacements once their 90th percentile lead level is below the lead action level. The 2021 LCRR requires systems to replace lead and GRR service lines if they exceed the lead action level, and to initiate a goal-based replacement program if they exceed the lead trigger level. In contrast, the LCRI requires systemwide replacement of lead and GRR service lines regardless of 90th percentile lead levels and at a faster replacement rate. By eliminating these major lead sources, the LCRI will result in significant public health benefits. While the EPA projected that a total of 339,000 to 555,000 lead and GRR service lines under control of water systems would be replaced under the 2021 LCRR over a 35-year period, the LCRI requires replacement of all lead and GRR service lines under control of the system (USEPA, 2020a, Exhibit C–1) within 10 years for most water systems. This is a key element of the LCRI and is intended to provide both broader and more certain lead risk reduction than any of the prior lead rules. The EPA projects that all lead and GRR service lines will be replaced under the LCRI over the period covered by the economic analysis. Specifically, the EPA estimates that 6.7 million lead and GRR service lines will be replaced within the 10-year mandatory replacement window and the remaining approximately 200,000 lines will be replaced in the following years for systems with deferred replacement deadlines. Thus, the number replaced among all systems nationwide is expected to be substantially greater than under the 2021 LCRR (USEPA, 2024d). Note that under the LCRI, like the 2021 LCRR, there are also about 2 million lead connectors that are required to be replaced when they are encountered by the water system (*i.e.,* during water main replacement). For additional information on the EPA's estimated numbers of lead content service lines see chapter 3, section 3.4.4, of the final LCRI Economic Analysis (USEPA, 2024a).

In addition, the LCRI makes changes to the treatment technique for CCT that will maintain or improve public health protection. These changes include lowering the lead action level to 0.010 mg/L from 0.015 mg/L under the LCR and the 2021 LCRR. The LCRI lead action level thus requires water systems to take actions (*e.g.,* install or re-optimize CCT, conduct public education) both sooner and at lower lead levels than under the LCR or the 2021 LCRR. Similarly, the LCRI's requirement to use the higher result of the first- and fifth-liter tap samples at LSL sites will result in more systems installing or re-optimizing optimal corrosion control treatment (OCCT) one or more times after the LCRI compliance date, as well as notifying and educating the public about health risks from lead.

Several other changes to the LCRI warranted specific anti-backsliding analysis. First, the EPA is revising the OCCT requirements to no longer require

most systems with CCT that exceed the lead action level to re-optimize their OCCT multiple times before they complete their service line replacement program if they re-optimized once after the compliance date for LCRI and are meeting their optimal water quality parameters (OWQPs). However, the LCRI maintains or improves public health protection for those systems. Public health protection will be maintained because systems already conducting OCCT or having re-optimized OCCT will be required to continue to operate that treatment. Public health protections will also be maintained or improved because the LCRI requires systems that continue to exceed the lead action level to conduct additional public education activities and make filters available if they have ''multiple lead action level exceedances'' (see section IV.K of this preamble). The EPA anticipates additional health benefits from this change to the CCT requirements because systems and States can prioritize resources for these types of mitigation activities and, most importantly, lead service line replacement. These requirements will achieve greater public health benefits overall for systems with lead service lines by facilitating the removal of the most significant source of lead in drinking water and are more likely to lower the level of lead in tap samples compared to repeating OCCT re-optimization steps that may not achieve further reductions. Also, if there have been no significant source water or treatment changes (actions which themselves can require a CCT study), a new re-optimization study is likely to yield the same outcomes as a previous study. These systems will have re-optimized once after the compliance date for the LCRI and persistently high lead levels can be mitigated by targeted public education activities and the availability of filters.

In addition, the final LCRI requires systems that exceed the lead action level after they have replaced all lead and GRR service lines to install or re-optimize OCCT to tailor CCT based on the new conditions where lead and GRR service lines are no longer the most significant sources of lead. This can result in maintaining or improving health protection because systems may achieve better performing CCT when the study is designed to optimize treatment based on the new system characteristics. Further, regardless of whether a system is conducting service line replacement, the final LCRI maintains the rule provision in § 141.82(h) that allows the State to modify its decision for OCCT or re-optimized OCCT on its own initiative or in response to a request by a water system or other interested party.

In addition, the 2021 LCRR allows CWSs serving 10,000 persons or fewer and all NTNCWSs which exceed the lead action level to choose between four compliance options: replace lead and GRR service lines, install and maintain OCCT, conduct full replacement of lead-bearing plumbing, or install and maintain point-of-use devices, while systems serving greater than 10,000 persons were required to replace lead and GRR service lines and install or re-optimize CCT. The LCRI requires all water systems with lead or GRR service lines to conduct mandatory service line replacement regardless of lead levels. Accordingly, under the LCRI, small water systems with lead and/or GRR service lines are required to remove these significant sources of lead and may not choose between service line replacement and other options to protect against lead exposures if they exceed the lead action level. Instead, small CWSs serving 3,300 persons or fewer (reduced from 10,000 persons or fewer under the 2021 LCRR) and all NTNCWSs can choose among the remaining three options if approved by the State. This reduced threshold ensures appropriate application of the remaining options. Thus, the LCRI provides greater protection of public health than the 2021 LCRR for small systems with lead or GRR service lines that exceed the lead action level. As compared to the pre-2021 LCR, the LCRI improves the level of public health protection provided by the rule for systems without lead or GRR service lines that serve less than 3,300 persons that exercise this compliance flexibility; these systems will be subject to the lower action level and improved public education, including lead sampling at schools and child care facilities. For systems with lead or GRR service lines that serve less than 3,300 persons that exercise this compliance flexibility, the lower action level, coupled with a mandatory service line replacement requirement, increases the level of health protection at those systems as compared to the pre-2021 LCR.

The EPA is requiring additional improvements across other parts of LCRI that will result in some actions taken both at lower lead levels and other actions that must be taken regardless of lead levels to better protect public health. Exhibit 1 in section II.A of this preamble summarizes these changes and illustrates comparisons among the pre-2021 LCR, the 2021 LCRR, and the final LCRI requirements.

As a whole, therefore, the LCRI improves public health protection relative to the LCR or the 2021 LCRR. This conclusion is supported by a comparison of the monetized health benefits. See chapter 5, section 5.6.2, and appendix F of the final LCRI Economic Analysis (USEPA, 2024a) for 2021 LCRR to LCRI monetized estimated health benefits comparisons and appendix C, of the final LCRI Economic Analysis for pre-2021 LCR to LCRI monetized estimated cost and health benefits comparisons.

Through this revision of the NPDWR for lead and copper, the EPA is requiring a more stringent and comprehensive set of lead reduction requirements compared to the LCR or the 2021 LCRR, including mandatory service line replacement; changes to the treatment technique for CCT; and more robust and meaningful public education. Therefore, the EPA expects the LCRI, as a whole, will improve public health protections relative to the LCR and the 2021 LCRR in accordance with SDWA section 1412(b)(9).

As part of the anti-backsliding analysis that the LCRI, as a whole, would improve public health protection relative to the LCR and the 2021 LCRR, the EPA also evaluated the impact of requiring water systems to comply with the LCR instead of the 2021 LCRR (with some limited exceptions) between October 16, 2024, and the compliance date of the LCRI. Through the consultations the EPA conducted as part of the 2021 LCRR review, as well as the engagements and consultations the EPA held to support the development of the proposed and final LCRI, including public comments received, many stakeholders, including States and water systems, provided feedback on the challenge of implementing successive changes to the LCR over a short period of time, such as the inefficient use of time and resources needed to prepare to implement requirements that could be different or no longer apply in the rule's next iteration and public confusion about rapidly changing requirements. Because of these challenges, as explained further below, the EPA is requiring that water systems continue to implement the pre-2021 LCR requirements between promulgation of the LCRI and the compliance date of three years after promulgation. In addition, the EPA is requiring water systems to implement the 2021 LCRR requirements for the initial service line inventory, notification to persons served by known or potential LSLs, Tier 1 public notification of lead action level exceedances, and associated reporting

requirements (see section V.B of this preamble for further discussion).

The EPA previously recognized that the LCRR is an improvement in public health protection over the LCR, especially in light of the inventory requirements of the 2021 LCRR. Notwithstanding the EPA's elimination of certain LCRR compliance deadlines in the LCRI, the EPA expects greater health benefits from the LCRI. The improvement of public health attributable to the 2021 LCRR compared to the LCR is based primarily on the changes to the treatment technique requirements of LSLR, OCCT, and public education—actions that occur over extended periods of time in response to tap sampling results that exceed certain thresholds. The EPA does not expect those projected improvements from the 2021 LCRR would have been realized between the October 16, 2024, compliance date for the 2021 LCRR and the compliance date of the LCRI. Moreover, the EPA expects that, if compliance with the entire 2021 LCRR were required starting October 16, 2024, it would negatively affect water systems' abilities to comply with the LCRI to realize the greater health risk reduction benefits of the LCRI.

Since LCRI compliance is required in the third year of the 2021 LCRR implementation, systems and States would be simultaneously tasked with implementation of two different rules at the same time they are engaged in the startup activities for the LCRI. The startup activities for water systems include reading and training on the rule to understand its new requirements, creating a staffing plan, and securing funds for compliance among other requirements such as developing a baseline inventory and service line replacement plan. The startup activities for a State include adopting State regulations, modifying data systems, and conducting internal and external training. If water systems are required to simultaneously implement the entire 2021 LCRR for the first time and prepare for LCRI compliance, the EPA expects that it would be beyond the capacity of water systems, States, and the EPA where direct implementation occurs, and therefore, the expected benefits of one or both rules would not be realized (see section V.B of this preamble for further discussion).

Allowing water systems to transition from compliance with the LCR to compliance with the LCRI, while requiring systems to comply with the 2021 LCRR's initial inventory requirements in the interim, will result in more full service line replacements and, thus, broader and faster health risk reduction than if adequate planning for LCRI compliance did not take place because of the diversion of scarce system and State resources towards short-term implementation of the 2021 LCRR.

F. White House Lead Pipe and Paint Action Plan and the EPA's Strategy To Reduce Lead Exposures and Disparities in U.S. Communities

The development of the LCRI is a key action of the Lead Pipe and Paint Action Plan, released by the Biden-Harris Administration in 2021 (The White House, 2021). The aim of the plan is to mobilize resources from across the Federal Government through funding made available from the Infrastructure Investment and Jobs Act, also referred to as the Bipartisan Infrastructure Law (BIL), to reduce lead exposure from pipes and paint containing lead. The plan includes a goal of eliminating all LSLs and remediating lead paint.

In October 2022, the EPA published the ''Strategy to Reduce Lead Exposures and Disparities in U.S. Communities'' (or ''Lead Strategy'') to ''advance EPA's work to protect all people from lead with an emphasis on high-risk communities'' (USEPA, 2022a). This agency-wide Lead Strategy promotes environmental justice in communities challenged with lead exposure and includes four key goals: (1) reduce community exposures to lead sources; (2) identify communities with high lead exposures and improve their health outcomes; (3) communicate more effectively with stakeholders; and (4) support and conduct critical research to inform efforts to reduce lead exposures and related health risks. The LCRI is a key action within the EPA's Lead Strategy and ''reflects EPA's commitment to fulfilling the Biden-Harris Administration's historic commitment of resources to replace lead pipes and support lead paint removal under the Lead Pipe and Paint Action Plan'' (USEPA, 2022a).

G. Bipartisan Infrastructure Law and Other Financial Resources

There are a number of pathways for systems to receive support for LSLR and related activities, including low- to no-cost financing through the Drinking Water State Revolving Fund (DWSRF); lead remediation grants under authorities established by the WIIN Act and incorporated into SDWA at sections 1459A, 1459B, and 1464; and low-cost financing from the Water Infrastructure Finance and Innovation Act (WIFIA) program. The EPA strongly encourages water systems to evaluate these available funding opportunities to support LCRI implementation and full LSLR. Water systems are encouraged to contact their State's DWSRF program to learn about project eligibilities, requirements, and how to apply for assistance through the DWSRF.

The BIL appropriated $30.7 billion in supplemental DWSRF funding over a five year period and reemphasized the importance of LSLR under the DWSRF program by including $15 billion specifically appropriated for ''lead service line replacement projects and associated activities directly connected to the identification, planning, design, and replacement of lead service lines.'' Full service line replacement is an eligible expenditure under the DWSRF regardless of the ownership of the property on which the service line is located. The BIL LSLR, BIL General Supplemental, and base program appropriations can pay for LSLR and related activities.

The BIL requires that States provide 49 percent of their LSLR and General Supplemental capitalization grant amounts as additional subsidization in the form of principal forgiveness and/or grants to disadvantaged communities, as defined under SDWA section 1452(d)(3). Assistance provided as additional subsidization does not need to be repaid. If available, additional subsidization can be used to cover the cost of customer-side LSLR. State DWSRF programs are strongly encouraged to prioritize available additional subsidization for this purpose.

In May 2024, the White House highlighted its efforts to accelerate progress towards the elimination of LSLs in the United States (The White House, 2024a). The President announced the availability of $3 billion in funding for LSLR, part of the $15 billion in dedicated BIL DWSRF funding for LSLR. For example, as part of this available BIL DWSRF funding, the President announced $76 million for LSLR in the State of North Carolina, for a total distribution of $250 million in BIL DWSRF to communities in North Carolina over the first three years of BIL implementation. In addition, the DWSRF program is part of the Justice40 Initiative, which has the goal that 40 percent of the overall benefits of certain Federal investments flow to disadvantaged communities. Additionally, several cities demonstrate the significance of BIL funding in assisting communities to equitably replace their LSLs as quickly as feasible. Pittsburgh, Pennsylvania has received over $40 million in BIL funding and is on track to eliminate LSLs in its city by 2026. The City of Milwaukee, Wisconsin

is receiving over $30 million in BIL funding for LSLR through the DWSRF, putting the city on track to replace all its LSLs within 10 years instead of the initially estimated 60 years (The White House, 2024a; 2024b).

Corrosion control planning and design, LSL inventories and replacement plans, and associated capital infrastructure projects are eligible for DWSRF funding under the DWSRF General Supplemental appropriation under the BIL as well as the DWSRF annual base appropriations. However, CCT is not an eligible activity for DWSRF funding from the $15 billion specifically appropriated in BIL for LSLR and associated activities. States may use DWSRF set-aside funds to assist water systems' development of corrosion control strategies and LSL inventories and replacement plans.

Under the DWSRF, State programs are authorized to reserve a portion of their capitalization grants as set-asides that can be spent on non-infrastructure purposes. Set-asides can fund State programs, technical assistance and training for water utilities (such as educational opportunities for operators), and other activities that support achieving the public health protection objectives of SDWA. Set-asides taken from BIL LSLR capitalization grants must be used to either administer the capitalization grant or for eligible projects and activities that meet the statutory purpose of these LSLR funds. Activities must be directly connected to the identification, planning, design, and replacement of LSLs. Examples of eligible projects and activities from BIL LSLR set-aside funds include, but are not limited to, planning and design for LSLR; developing or updating service line inventories; providing technical assistance, education, and outreach; and non-routine sampling that is not for compliance purposes.

The WIIN Act established three drinking water grant programs incorporated into SDWA that are available to support activities to reduce lead exposures in drinking water. The Reducing Lead in Drinking Water grant program awards funding for the reduction of lead in drinking water in disadvantaged communities, as defined under SDWA section 1452(d)(3). This grant program focuses on two priority areas: (1) Reduction of lead exposures in the nation's drinking water systems through water infrastructure and treatment improvements and (2) reduction of children's exposure to lead in drinking water at schools and child care facilities (USEPA, 2022b). The Voluntary School and Child Care Lead Testing and Reduction grant program awards funding to States, Territories, and Tribes to assist local and Tribal educational agencies in voluntary testing and remediation for lead contamination in drinking water at schools and child care facilities (USEPA and USHHS, 2023). The Small, Underserved, and Disadvantaged Communities grant program awards funding to States, Territories, and Tribes to assist public water systems in underserved, small, and disadvantaged communities in meeting SDWA requirements, including the lead and copper NPDWRs (USEPA, 2021f).

The EPA also administers the WIFIA program, a Federal credit program, to accelerate investment in the nation's water infrastructure by providing long-term, low-cost supplemental loans for regionally and nationally significant projects, including those eligible for funding through DWSRFs (USEPA, 2023b). The WIFIA program can provide financial assistance for LSLR projects. The City of Chicago is using its $336 million WIFIA loan to assist with replacing LSLs serving single family homes and small multi-unit buildings citywide whenever there is a leak or break on a lead line or when performing water and sewer main updates. The City of Philadelphia received a commitment of over $340 million in WIFIA financial assistance to upgrade its water system, including an initial $19.8 million WIFIA loan that will help modernize critical infrastructure by replacing approximately 160 LSLs and 13 miles of water mains.

The EPA's water technical assistance (WaterTA) supports communities to identify water challenges; develop plans; build technical, managerial, and financial capacity; and develop application materials to access water infrastructure funding that results in more communities with applications for Federal funding, quality water infrastructure and reliable water services. The EPA collaborates with States, Tribes, Territories, communities, and other key stakeholders to implement WaterTA efforts. For example, numerous Environmental Finance Centers (EFCs) are available to help underserved communities that have struggled to access Federal funding, such as DWSRF funding, to receive the support they need to access resources for water infrastructure improvements, including LSLR. The EFCs each have their own workplans and many of them include a focus on small systems. Additionally, the Training and Technical Assistance to Improve Water Quality and Enable Small PWSs to Provide Safe Drinking Water grant program provides training and technical assistance to small systems to achieve and maintain compliance with SDWA. The grant program serves two main functions for small PWSs—to build their financial and managerial capacity to provide safe drinking water over the long term and to improve water quality and sustainable operations.

As part of WaterTA efforts, the EPA utilized BIL funds to establish the Lead Service Line Replacement (LSLR) Accelerators initiative and the Get the Lead Out (GLO) Initiative. These initiatives further the EPA's administration of the BIL DWSRF funding for LSLR by helping underserved communities access funds from the BIL to accelerate the replacement of LSLs, which pose risks to the health of children and families.

In January 2023, the EPA announced the LSLR Accelerators initiative (USEPA, 2023c). This pilot initiative provides targeted technical assistance services to four States—Connecticut, Pennsylvania, New Jersey, and Wisconsin—working with 40 communities across those States in 2023 and 2024. The EPA is providing direct technical assistance to guide communities through the process of LSLR, including support in developing LSLR plans, conducting inventories to identify lead pipes, increasing community outreach and education efforts, and supporting applications for Federal funding. In addition to providing direct technical assistance to communities, the Accelerators initiative is supporting these States in strategically deploying funding from the BIL for LSLR while developing best practices that can serve as a roadmap for other State programs. In light of the ongoing success of the LSLR Accelerators pilot, the GLO Initiative launched in November 2023 to expand LSLR technical assistance to approximately 200 communities across the country. The GLO Initiative will work with water systems to develop a roadmap for identification and full replacement of all LSLs, including associated activities such as developing a service line inventory, community engagement plan, LSL replacement plan, and a DWSRF application with active involvement from the community. The EPA will use the lessons learned from the GLO Initiative's direct technical assistance to develop tools, best practices, and peer exchange and learning that help communities nationwide address barriers to lead pipe replacement. While the EPA recognizes external funding may not be available for all systems, all systems can benefit from these lessons

learned. For additional information on EPA funding, see *https://www.epa.gov/ground-water-and-drinking-water/funding-lead-service-line-replacement.* For additional information on technical assistance, see *https://www.epa.gov/water-infrastructure/water-technical-assistance-waterta.* In addition, for information on available funding and technical resources for lead service line replacement in small and disadvantaged communities please see *https://www.epa.gov/sites/default/files/2020-12/documents/ej_lslr_funding_sources-final.pdf.*

In addition to the EPA-administered funding for service line replacement and other lead reduction actions, other Federal programs outside of the EPA offer significant opportunities to further support these actions. Examples include Federal and State funds from the American Rescue Plan (ARP), Community Development Block Grant (CDBG) programs through the U.S. Department of Housing and Urban Development (HUD), Rural Development through the U.S. Department of Agriculture (USDA), and the Public Works Program through the U.S. Department of Commerce Economic Development Administration (EDA).

ARP funds are eligible to fund LSLR as well as replacement of internal plumbing and faucets and fixtures in schools and child care centers. Recipients of the ARP State and Local Fiscal Recovery Funds budgeted over $519 million for projects to remediate lead in drinking water as of April 2024 (USDT, 2024). For example, Washington, DC, budgeted $30 million to increase funding available to assist residents in replacing LSLs to their homes. Additionally, Buffalo, New York, will use $10 million to expand its existing program to remove LSLs in 1,000 additional homes (Department of the Treasury, n.d.). Following a lead-in-water crisis, the City of Benton Harbor, Michigan, replaced all its LSLs within two years using ARP funding (The White House, 2024a). The City of St. Paul, Minnesota, received $16 million in ARP funds which has enabled the city to target replacement of all LSLs by 2032 at no cost to residents.

HUD CDBG programs support community development through activities that address needs, such as infrastructure, economic development projects, public facilities installation, and community centers (USHUD, 2020). In 2017, North Providence, Rhode Island, utilized CDBG funding from HUD to replace customer-side LSLs (USEPA, 2023d). HUD's Healthy Homes Production grant program and Healthy Homes Supplements to HUD's Lead Hazard Reduction grant programs are available to address a wide range of housing-related hazards including LSLR (USHUD, 2023).

USDA Rural Development provides a variety of grant and loan programs to rural communities, organizations, businesses, and individuals to finance infrastructure repair and replacement, including LSLR (USEPA, 2020b). The EDA Public Works Program supports physical infrastructure improvements in economically distressed communities (USEPA, 2020b).

States are using the available Federal funding sources as well as providing their own funding to support LSLR. As of February 2023, Illinois EPA has provided almost $89 million for LSLR (IEPA, 2023). Illinois EPA's DWSRF is providing funding to numerous systems' LSLR projects, including over $4 million in funding for the City of Sycamore and $3.9 million for the City of Batavia (IEPA, 2023). Other States are also providing funding for LSLR. New York's LSLR Program received $20 million in State funding in 2017 and an additional $10 million in 2019 for communities meeting specific eligibility characteristics, including income, measured blood lead levels, and age of homes (NYDOH, 2019). The State of Minnesota approved $240 million for replacing LSLs, mapping and inventory activities, and informing residents about the benefits of LSLR. The funding was used to establish an LSLR grant program, where the awarded grants must cover 100 percent of the cost of replacing the customer's portion of an LSL and prioritize replacing LSLs that are an imminent threat to public health and safety, areas with children, lower-income residents, and where replacements will provide the most efficient use of the grant funding (such as in coordination with main replacement) (State of Minnesota, 2023). The funding will be available beginning in 2024 until June 30, 2033, which corresponds to the year the State has set as their official goal for replacing all LSLs (State of Minnesota, 2023). Regional authorities, like the Massachusetts Water Resources Authority (MWRA), are also providing funding to support LSLR. MWRA provided $100 million in loan funds for LSL investigation and replacement projects in their metropolitan Boston communities (MWRA, 2023).

The EPA developed ''Strategies to Achieve Full Lead Service Line Replacement,'' which is a guidance document that discusses funding sources including additional ways systems have financed full LSLR (USEPA, 2019a). For example, the City of Green Bay, Wisconsin, used funding from a stadium tax to fund customer-side LSLR (USEPA, 2019a). The EPA also developed ''Funding and Technical Resources for Lead Service Line Replacement in Small and Disadvantaged Communities,'' which is a guide to help small and disadvantaged communities identify potential Federal funding sources and technical assistance for LSLR (USEPA, 2020b).

H. Lead Exposure and Environmental Justice, Equity, and Federal Civil Rights

1. Environmental Justice

Stakeholder feedback and the EPA's environmental justice analysis informed the agency's understanding of how the LCRI could affect communities with environmental justice concerns. As described in section IV.C of the LCRI proposal (88 FR 84898, USEPA, 2023a), the EPA developed the proposed revisions after engaging with community stakeholders in cities with concerns about lead in drinking water during the LCRR review and by holding two public listening sessions on the topic of environmental justice to support the LCRI rulemaking. The EPA also prepared an environmental justice analysis for the proposed rule to inform the EPA's understanding of how the proposed LCRI could impact communities with environmental justice concerns (USEPA, 2023e).

The EPA is finalizing requirements that are anticipated to achieve more equitable human health protection outcomes, especially in how service line replacement programs are planned and implemented. For example, the LCRI has a requirement for water systems to make their service line replacement plans publicly accessible to inform their communities about how they will prioritize service line replacement (see section IV.C of this preamble). The rule's requirements will also help to ensure that communication about the replacement program and the risks of lead in drinking water are more accessible to all consumers including individuals with limited English proficiency. See section V.B.9 of the proposed LCRI for further discussion (88 FR 84927, USEPA, 2023a). In addition, as discussed in the previous section, Federal funds are available to support equity including BIL funds that require that States provide 49 percent of their LSLR and General Supplemental capitalization grant amounts as additional subsidization in the form of principal forgiveness and/or grants to disadvantaged communities, as defined

under SDWA 1452(d)(3) (see section III.G of this preamble).

2. Applicability of Federal Civil Rights Laws

The EPA enforces and ensures compliance with Federal civil rights laws that together prohibit discrimination on the bases of race, color, national origin (including limited-English proficiency), disability, sex and age, respectively title VI of the Civil Rights Act of 1964 (title VI), section 504 of the Rehabilitation Act of 1973 (section 504), title IX of the Education Amendments of 1972 (title IX), section 13 of the Federal Water Pollution Control Act Amendments of 1972 (section 13), and the Age Discrimination Act of 1975. The EPA's nondiscrimination regulations at 40 CFR parts 5 and 7 implement these Federal civil rights statutes and contain important civil rights requirements for applicants and recipients of EPA financial assistance.

All applicants for and recipients of EPA financial assistance have an affirmative obligation to comply with these laws, as do any subrecipients of the primary recipient, and any successor, assignee, or transferee of a recipient, but excluding the ultimate beneficiary of the assistance.

The Federal civil rights laws prohibit discrimination based on race, color, national origin (including limited-English proficiency), disability, sex, and age in any program or activity of applicants for and recipients of EPA financial assistance. Accordingly, water systems that apply for or receive EPA financial assistance must take reasonable steps to provide meaningful access to their programs and activities to individuals with limited-English proficiency. Recipients must provide individuals with disabilities an equal opportunity to participate in or benefit from their programs and activities.

When developing service line replacement plans, water systems that are recipients or subrecipients of EPA financial assistance must ensure compliance with Federal civil rights laws and the EPA's nondiscrimination regulations. As a best practice, recipients may consider including as one component of such a plan an analysis of the demographic data that recipients of EPA financial assistance are required to collect under 40 CFR 7.85(a). The EPA encourages water systems to engage with local community-based organizations and community members about the service line replacement process and in the development of the service line replacement plan. The EPA also encourages States to consider if any State law or regulation may create barriers that could lead to challenges for water systems to meet their obligations under Federal civil rights laws and the EPA's nondiscrimination regulations. To support this effort, the LCRI has a special primacy requirement for States to identify any potential barriers to full service line replacement, which is discussed further in section V.C of this preamble.

IV. Final Revisions to 40 CFR Part 141, Subpart I, Control of Lead and Copper

A. Regulatory Approach

Section 1412(b)(7)(A) of SDWA authorizes the United States Environmental Protection Agency (EPA) Administrator ''to promulgate a national primary drinking water regulation that requires the use of a treatment technique in lieu of establishing an MCL, if the Administrator makes a finding that it is not economically or technologically feasible to ascertain the level of the contaminant'' (42 U.S.C. 300g–1(b)(7)(A)). In the 1991 Lead and Copper Rule (LCR), the EPA evaluated the best information available at the time consistent with the statutory standard and determined that lead and copper met the criteria for establishing a treatment technique rule. For the Lead and Copper Rule Improvements (LCRI), the EPA is again finding, as it has consistently done since 1991, that an MCL for lead is not feasible because ''it is not feasible to ascertain the level of the contaminant'' within the meaning of the Act. While it is economically and technologically feasible to detect the presence and/or amount of lead in a water sample, it is not feasible to ascertain the level of lead such that the EPA can set an MCL within the purpose of the statute: *i.e.,* a level of lead applicable to the entire system that accurately reflects both consumers' exposure to the contaminant and the public water system's contribution to that exposure or ability to control it.

Specifically, as described in more detail below, the EPA considered whether the level of lead and copper can be ascertained at the tap, whether it was possible to determine single national numerical standards for lead and copper at the tap that is reflective of the effectiveness of treatment applied by water systems, and the feasibility of establishing MCLs for lead and copper when lead and copper are present in both water systems' distribution system and building premise plumbing. In making this finding, the EPA conducted a new analysis of the issue by re-evaluating the information and data and analyses underlying the EPA's conclusion in the 1991 LCR and evaluating the new information and data available since the 1991 LCR was promulgated.

The primary rationale for promulgating the LCR as a treatment technique rule was due to the nature of lead and copper contamination. As the EPA described in 1991, and is still accurate today, lead and copper do not generally occur in source water, but instead are introduced in drinking water by the corrosive action of water in contact with plumbing materials containing lead and copper. These sources of lead and copper were and continue to be present in both the water system's distribution system and in plumbing materials in homes, as discussed further below. In 1991, the EPA explained that lead and copper levels at the tap can be highly variable ''due to many factors including the amount of lead and copper in the resident's plumbing or in the PWS's distribution system . . . temperature, age of plumbing components, chemical and physical characteristics of distributed water, and the length of time water is in contact with those materials'' (56 FR 26473, USEPA, 1991). The EPA noted that while it is feasible to accurately measure the level of lead or copper in an individual sample, the inherent variability across sites and systems makes it ''technologically infeasible to ascertain whether the lead or copper level at a tap at a single point in time represents effective application of the best available treatment technology'' (53 FR 31527, USEPA, 1988). The EPA discussed how if the agency were to select an MCL, it must be ''as close as feasible'' to the maximum contaminant level goal (MCLG) in accordance with the statutory standard. The EPA analyzed lead and copper tap sampling data to determine if there is a ''precise level [of lead] at the tap'' that could be feasibly met by large water systems if they were to apply treatments representing best available technology to the water systems themselves (56 FR 26473, USEPA, 1991). The EPA found that even when minimizing some of the sources of variability (*e.g.,* the time the water is in contact with the plumbing materials, age and type of plumbing material), lead and copper levels still varied considerably. Lead and copper levels varied at the same system both before and after the application of corrosion control treatment (CCT), between different systems, and between individual homes within the same system (56 FR 26473–26475, USEPA,

1991). The EPA concluded that because of the sources of variability described above, there is no precise level that would be generally considered ''feasible'' based upon application of best available treatment in all water systems and further found that the level that is as close as ''feasible'' to an MCLG would vary in systems throughout the country based on the sources of lead and copper, the corrosivity of the water, and how the water chemistry responds to CCT (56 FR 26473, USEPA, 1991).

Second, in the development of the 1991 LCR the EPA explained that an additional challenge for establishing MCLs for lead and copper was that much of the lead and copper sources are privately owned and/or are outside of the control of the public water system (PWS), such as premise plumbing. During the development of the 1991 LCR, the EPA received comments stating that by ''only establish[ing] MCLs for lead and copper for the water as it leaves the control of the public water system'' (56 FR 26472, USEPA, 1991), and therefore monitoring for compliance in the distribution system (*e.g.,* the entry point to the distribution system), could the EPA reduce some of the variability associated with lead and copper levels and address the problem of water system responsibility for conditions outside of their control. However, the agency determined that setting an MCL for lead and copper at the point the water leaves the control of the PWS would be inconsistent with the Safe Drinking Water Act (SDWA) definition of an MCL as ''the maximum level allowed of a contaminant in water which is delivered to any user of a public water system.'' Specifically, the EPA reasoned that MCLs for lead and copper would have to be assessed with monitoring at customers' taps to accurately represent the level of the contaminants in drinking water delivered to the user, noting that, ''EPA has established monitoring requirements for inorganic and organic contaminants that require monitoring in the distribution system because this is easier and provides just as accurate an assessment of tap levels as tap sampling itself'' (56 FR 26478, USEPA, 1991). In contrast, the EPA determined that monitoring for lead and copper in the distribution system for compliance with MCLs ''would not adequately protect the public from lead and copper introduced by the interaction of corrosive water delivered by the PWS with lead and copper-bearing materials in the homeowners' plumbing'' (56 FR 26472–26473, USEPA, 1991). Despite the fact that some lead and copper sources may be outside the control of the water system, including premise plumbing sources, the EPA determined that ''public water systems can affect, at least to some degree, water tap lead and copper levels through adjustment of the corrosivity of water delivered by the water system'' (56 FR 26473, USEPA, 1991). However, as explained in the 1991 LCR rulemaking, due to the factors described above (*e.g.,* variability of lead and copper in drinking water, treatment effectiveness, and sources of lead and copper), water systems can affect drinking water corrosivity, but not in a manner that would make it technically feasible to set an MCL applicable to all systems. As explained above, the EPA is reaffirming that it is not feasible to ascertain the level of lead such that the EPA can set an MCL within the purpose of the statute: *i.e.,* a level of lead applicable to the entire system that accurately reflects both consumers' exposure to the contaminant and the public water system's contribution to that exposure or ability to control it.

Third, the EPA reasoned in the 1991 rulemaking that the definition of a PWS under SDWA precludes the agency from promulgating a ''regulation that holds a [public water system] liable for conditions that are beyond its control'' (56 FR 26476, USEPA, 1991). In the 1991 rulemaking, the EPA posited that an MCL would not be considered ''feasible'' if a significant number of water systems would be in noncompliance due to conditions outside of their control, such as lead exposures from customer's premise plumbing within buildings. The EPA contemplated an alternative approach of establishing MCLs that would meet the statutory standard for an MCL in SDWA section 1412(b)(4)(B) and 1412(b)(4)(D)—''as close to the maximum contaminant level goal as is feasible''—*i.e.,* ''feasible with the use of the best available technology, treatment techniques and other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration.)'' The resulting MCLs would need to be high enough to enable most systems to meet them after installing treatment (while accounting for the variability of lead and copper levels that would persist after treatment installation, given the sources of lead and copper). However, the EPA found that such an approach would lead ''to unnecessarily high exposures of significant segments of the population'' and noted that systems below this higher MCL ''would not be required to install any treatment to be in compliance'' (56 FR 26477, USEPA, 1991). Therefore, the EPA concluded that such an approach would be inconsistent with the objective of the statute to prevent ''known or anticipated adverse effects on the health of persons to the extent feasible'' (SDWA 1412 (b)(7)(A)). As explained above, the EPA is reaffirming that it is not feasible to ascertain the level of lead such that the EPA can set an MCL within the purpose of the statute.

Considering the above facts, analyses, and statutory requirements, the EPA concluded that it was not feasible to set MCLs for lead and copper and promulgated the 1991 LCR that is comprised of four treatment techniques: CCT, source water treatment, lead service line replacement (LSLR), and public education. As described in section III.C of this preamble, the EPA introduced action levels for lead and copper to implement the treatment technique requirements in the rule. The action levels are not based on a level of exposure but rather are designed to determine the systemwide effectiveness of corrosion control and are compared to the 90th percentile of lead and copper samples collected from consumer taps to determine if the water system must take actions under the rule. In 1991, the EPA explained how the action levels are not MCLs, and they do not function as MCLs (56 FR 26488, USEPA, 1991). For more information about action levels, including the lead action level the EPA is finalizing in the LCRI and the EPA's determination about why an action level was not an MCL under the LCR and is still not an MCL under the final LCRI, see section IV.F.4 of this preamble.

The EPA's 1991 decision to promulgate a treatment technique rule for lead was challenged and upheld by the D.C. Circuit Court of Appeals (*American Water Works Association* v. *EPA* (*AWWA*), 40 F.3d 1266, 1270–71 (D.C. Cir. 1994)). Because the Court agreed with the EPA's analysis, described above, that it is not feasible to ascertain the level of lead in drinking water, the Court upheld the EPA's decision not to implement an MCL for lead (*AWWA,* F.3d 1266, 1270–71).

As described in the proposed LCRI, the EPA re-evaluated whether a treatment technique rule in lieu of an MCL is consistent with the statute. As part of the agency's analysis, the EPA re-evaluated the information considered and conclusions made in promulgating the LCR in 1991, in addition to the best information and data available in more than 30 years since the LCR was promulgated, including from stakeholder feedback received during

the LCRR review. Based on the analysis conducted, the EPA has determined that information and factors consistent with SDWA that cause lead and copper variation identified in the 1991 LCR and supported in the 2021 LCRR continue to apply today. Therefore, the EPA is finding that it is not feasible to ascertain the level of the contaminant and the EPA thus is not establishing MCLs for lead and copper. The EPA received comments stating that the EPA must promulgate an MCL for lead, as described below. However, commenters did not raise any new arguments that change the agency's analysis and understanding of this issue. For the final LCRI, the EPA is reaffirming the findings and rationale presented in the proposed LCRI (88 FR 84907–84910, USEPA, 2023a) and as discussed below.

New information available since the 1991 LCR continues to show that the variability of lead and copper levels make it infeasible to ascertain the level of the contaminant, and any level that could be feasibly set would not provide the protection from lead exposure that can be provided by the treatment technique. Several reasons contribute to the EPA's determination on lead and copper variation supporting the use of a treatment technique. First, as noted in the LCR, ''lead release can be unpredictable over time and across households, can originate from many sources owned by the water system and the customer, can vary based on the sample technique used, and can be affected by customer water use habits'' (53 FR 31527, USEPA, 1988). Studies continue to show that the levels of lead and copper measured at the tap after treatment are variable due to several factors including, but not limited to, the amount of lead in any individual site's plumbing, the age of plumbing components, the physical and chemical characteristics of the water, the length of time water is in contact with material, and consumer water use patterns (Triantafyllidou et al., 2021). Studies show that lead levels can widely vary at a single site depending on the sampling protocol (Del Toral et al., 2013; Lytle et al., 2019; Lytle et al., 2021; Masters et al., 2021; Triantafyllidou et al., 2015). For example, Del Toral et al. (2013) showed that there was significant variability in lead concentrations from water samples collected at the same site as well as among different lead service line (LSL) sites across Chicago, Illinois. The EPA's analysis of 2019 State of Michigan Lead Tap Monitoring Data as part of the 2021 LCRR (see docket item no. EPA–HQ–OW–2017–0300–1617) also demonstrated variability among collected water samples grouped by combinations of LSL status, CCT status, and liter sampled (USEPA, 2020c, Exhibit F–4). Even when using the same sampling protocol, variation in lead at a single site can still occur due to water use patterns and highly variable release of particulate lead (Clark et al., 2014; Masters et al., 2016; Xie and Giammar, 2011).

As described in the proposed LCRI, the EPA analyzed lead data from the dataset collected for the Six-Year Review 4 (2012 to 2019) for systems with different characteristics (*e.g.,* CCT and LSL status) to further evaluate how lead and copper levels at the tap can vary. The EPA used the Federal version of the Safe Drinking Water Information System (SDWIS/Fed) (2012 to 2020) data and information on LSL status to select a subset of 7,161 systems with identified CCT and LSL status (USEPA, 2023a). The EPA conducted a similar analysis to the one used for the 1991 LCR, by evaluating the magnitude of difference between two points in the distribution (*i.e.,* the ratio of the 90th percentile and 50th percentile) as a measure of variability (56 FR 26474, USEPA, 1991). The results of the analysis developed for the LCRI show high variability across systems for both lead and copper. Lead and copper levels vary both between systems, and at the same system across various years, regardless of CCT and LSL status. In some cases, systems had some tap samples with high levels of lead and copper and other samples where no concentrations were detected. This information confirms that lead and copper variability persist at the tap in water systems across the nation. See Exhibits 2 and 3 of the LCRI proposal for results and additional details (88 FR 84907–84908, USEPA, 2023a). Commenters did not dispute that lead and copper levels are variable at the tap.

Second, the conditions of plumbing materials also continue to vary from water system to water system, and from site to site within a water system, such that lead in drinking water continues to be subject to high levels of variability. Studies have shown that LSLs are the predominant contributor of lead in drinking water where they are present. A study published by the American Water Works Association (AWWA) Research Foundation found that LSLs contribute an estimated 50 to 70 percent of the mass of lead at the tap for sites served by LSLs (Sandvig et al., 2008). Another study found that removal of LSLs resulted in an average reduction of lead content at the tap by 86 percent (Lytle et al., 2019). However, while removal of LSLs is critical to reducing lead in drinking water, premise plumbing materials also continue to be a source of lead in drinking water (Elfland, 2010; Kimbrough, 2007; Rockey et al., 2021). In addition, premise plumbing materials can be a source of particulate lead. For example, brass particles and lead solder particles were identified as the cause of severe tap water contaminations during three field investigations in North Carolina and Washington, DC (Triantafyllidou and Edwards, 2012). This means that even where systems remove all LSLs, CCT must be continued because of the lead and copper sources that will remain in the premise plumbing of consumers' homes and other buildings (USEPA, 2020c), and in lead connectors. Systems without LSLs can exceed the lead action level, for example, due to the corrosion of premise plumbing containing lead. Under the 2021 Lead and Copper Rule Revisions (LCRR), the EPA estimated between 2.3 and 4.7 percent of community water systems (CWSs) without LSLs will exceed the current lead action level of 0.015 mg/L (USEPA, 2020d, chapter 3, Exhibit 3–25). Thus, the factors that cause lead and copper variation will continue to exist.

Third, despite changes to the allowable amount of lead in ''lead free'' plumbing, many older buildings can still be a source of lead. Some commenters asserted that LSLs have overtaken household plumbing as the dominant source of lead contamination due to the revised ''lead free'' standard. However, these commenters misconstrue SDWA section 1417 requirements. SDWA section 1417 prohibits the use of any pipe, any pipe or plumbing fitting or fixture, solder, or flux in the installation or repair of any PWS or in plumbing in a residential or nonresidential facility that provides water for human consumption that is not ''lead free'' as defined in section 1417(d). The 2011 Reduction of Lead in Drinking Water Act revised the definition of ''lead free'' in SDWA section 1417(d) from eight percent to a weighted average of 0.25 percent,[10] lowering the amount of lead that may be in plumbing materials used in repairs or new installations starting in 2014. The EPA's Lead Free Rule (85 FR 54236, USEPA, 2020c) requires third-party certification for new plumbing products

[10] The term ''lead free'' provided here is defined under SDWA section 1417(d) as follows: ''[T]he term 'lead free' means—(A) not containing more than 0.2 percent lead when used with respect to solder and flux; and (B) not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.''

as of September 1, 2023. However, SDWA section 1417 does not require anyone to replace previously installed plumbing materials that are not ''lead free'' as currently defined, and many buildings in the U.S. were constructed prior to 2014. Accordingly, the revisions to the ''lead free'' definition alone do not change the prevalence of legacy lead sources. Further, even products that meet the new definition of ''lead free'' may contain trace amounts of lead that can leach into drinking water (42 U.S.C. 300g–6(d)(1)). Therefore, premise plumbing in these buildings will continue to be a source of lead in drinking water. As illustrated both in peer-reviewed studies and through reported compliance data, lead levels vary at single sites over time, between sites within a system, and between systems, both for systems with and without LSLs and CCT.

Some commenters asserted that the agency's reasons for not setting an MCL for lead are inconsistent, stating that the EPA's primary rationale is based on not holding water systems responsible for sources of lead not owned by the water system while including provisions in the 2021 LCRR and the LCRI for LSLs that apply regardless of water system ownership (*e.g.,* service line inventory, service line replacement, and tap sampling requirements). This argument misconstrues the comprehensive set of reasons for the EPA's decision to not set an MCL for lead. In deciding whether to set an MCL for a particular contaminant or set a treatment technique rule, the primary focus of the statutory analysis is not on who is ''responsible'' for the sources of lead in drinking water, but whether it is feasible to ascertain the level of lead in drinking water. As described above, the variability of lead and copper levels make it ''technologically infeasible to ascertain whether the lead or copper level at a tap at a single point in time represents effective application of the best available treatment technology'' (53 FR 31527, USEPA, 1988). While premise plumbing is a contributor to lead and copper at the tap, the EPA found, and continues to find, that the quality of water delivered to customers can be controlled by systems regardless of whether the system physically controls all lead sources and that ''water systems can affect, at least to some degree, water tap lead and copper levels through adjustment of the corrosivity of water delivered by the system'' (56 FR 26473, USEPA, 1991). For example, studies indicate that CCT can reduce drinking water lead levels at the tap (Cardew, 2009; Hayes et al., 2008; Tully et al., 2019). However, while water systems can affect drinking water corrosivity, they cannot do so in a way that allows the EPA to set an MCL due to factors such as variability of lead and copper in drinking water, treatment effectiveness, and the sources of lead and copper as discussed above. Additionally, if the EPA were to establish an MCL despite these factors, it would be based on the principle that the MCL would set a level that could be met by most systems (taking into account variability in tap levels among systems after treatment), resulting in a level too high to be health protective as water systems below this high level would not be required to take any actions. Therefore, a treatment technique rule for lead and copper is also more health protective than an MCL would be.

Some commenters claimed that, because the LCR requires water systems to conduct tap sampling and take actions based on action levels, the EPA has found it feasible to ascertain lead levels for the purposes of a treatment technique, and therefore the EPA must set an MCL for lead. The EPA notes that the ability to accurately measure the level of a contaminant in a single sample is not equivalent to finding that it is ''feasible to ascertain the level of the contaminant'' for purposes of establishing a rule that prevents lead exposure consistent with SDWA. The measurement of lead or copper in a single sample alone does not indicate the extent of corrosion of lead and copper from plumbing materials (53 FR 31527, USEPA, 1988). As noted above, the EPA found that there is no precise level of lead at the tap that can be achieved through application of the best available treatment due to the high variability of lead at the tap. The EPA has also demonstrated that the key factors that led to the agency establishing a treatment technique rule for lead and copper still apply today. Therefore, it is not feasible to ascertain the level of lead for the purposes of establishing an MCL.

Additionally, the EPA notes that these commenters misconstrue the difference between the action level and an MCL. Due to the factors described above, the lead action level is not a precise statistical analysis of the effectiveness of treatment, but rather is a general screening level developed for use as a tool to simplify and enable implementation of the CCT treatment technique (see section IV.F.4 of this preamble for discussion of how the action level was developed). One key difference between action levels and MCLs is that exceeding an action level alone is not a violation of the rule, but rather a system is in violation if it fails to take required actions following an action level exceedance. While the lead action level is a numerical value, it is not equivalent to an MCL either in function or in terms of how it is derived (56 FR 26488, USEPA, 1991).

Some commenters claimed that the EPA has established MCLs for other drinking water contaminants, such as disinfection byproducts (71 FR 388, USEPA, 2006), and that EPA has stated that such contaminants are similarly prone to sampling variability. However, the preamble for the Stage 2 Disinfectants and Disinfection Byproducts Rule does not suggest that disinfection byproduct sampling is subject to the same level of sampling variability as lead sampling or that disinfection byproducts are so affected by sampling variability that it impacts the ability of water systems to accurately ascertain disinfection byproduct contamination from water samples (71 FR 388, 394, USEPA, 2006). Specifically, there is no discussion of the disinfection byproduct levels measured in the distribution systems and used for compliance as being unrepresentative of the levels in water delivered to consumers at the tap. Disinfection byproduct levels can vary based on factors such as residence time in the system, pipe diameter, location where disinfectants are added, and water temperature (71 FR 394, USEPA, 2006). Water systems are required to sample at different sites across the distribution system to account for this variability. However, the greater variability in lead and copper materials from sampling site to sampling site and the lead and copper levels in water at individual taps within the system is one difference between the lead and copper and the disinfection byproduct rules. While both rules require systems to evaluate water quality within the distribution system, due to the reasons stated above, the LCR also requires sampling at consumer taps, which is inherently variable across sites due to factors including differences in premise plumbing within homes. Sampling in the distribution system for lead and copper would not be representative of the levels of lead and copper at the tap. Put simply, there is no indication that the level of purported sampling ''variability'' associated with disinfection byproducts can be reasonably compared to that of lead contamination in drinking water.

Another critical distinction between lead and disinfection byproducts is that, unlike lead, disinfection byproducts arise from water systems disinfecting the water supply. Water systems

introduce disinfectants, such as chlorine and chloramine, into the drinking water supply (71 FR 394, USEPA, 2006). These disinfectants interact with organic and inorganic material in source waters to form disinfection byproducts. Water systems can control and account for the formation of disinfection byproducts, such as through source water treatment to reduce precursors (*e.g.,* total organic carbon) that can lead to disinfection byproduct formation when these precursors come into contact with disinfectants. On the other hand, lead is rarely found in source water (86 FR 4231, USEPA, 2021a) and instead enters drinking water through corrosion in lead pipes and fixtures, sometimes from lead pipes and fixtures outside the direct control of the water system. As such, there is no inconsistency between regulating disinfection byproducts through an MCL while finding that a treatment technique is necessary for lead.

Considering the above information and analysis, the EPA is determining that the same conditions that prompted the agency to promulgate a treatment technique rule for lead and copper in 1991 still exist today and justify continued use of a treatment technique rule for regulating lead and copper. This includes the nature of lead contamination, where much of the lead in drinking water continues to originate in the distribution system and from sources outside the control of water systems (*e.g.,* premise plumbing), the condition and composition of water systems' plumbing and distribution system varying from system to system, and the variability of lead and copper levels at the tap. In addition to finding that it is not feasible to set an MCL for lead and copper at the tap, the EPA also notes the benefit of a treatment technique. As noted above, the EPA can set requirements that compel the system to take various actions to reduce exposure to lead in drinking water, while an MCL would not compel action until, and unless, the MCL is exceeded (USEPA, 2020b). The EPA is prohibited from requiring a specific treatment when promulgating an MCL (see SDWA section 1412(b)(4)(E)). For example, the agency would not be authorized to require all water systems to conduct mandatory service line replacement or some of public education requirements as part of an MCL rule.

The conditions that led the agency to make the findings necessary to promulgate a treatment technique rule for lead and copper in 1991 still apply and are supported by an evaluation of the best information and data available since the LCR was promulgated. For these reasons, the agency is continuing to regulate lead and copper through four treatment techniques: (1) service line replacement, (2) CCT, (3) public education, and (4) source water treatment.

B. Service Line Replacement

1. Overview

There is no safe level of lead in drinking water. More than 30 years after the EPA promulgated the 1991 LCR, the use of lead and galvanized requiring replacement (GRR) service lines to deliver water poses a continual threat of significant adverse health effects. Where present, LSLs are the most significant source of lead in drinking water. Even when water systems with lead and GRR service lines have implemented optimal corrosion control treatment (OCCT), lead can still be released from these service lines. In addition, improper implementation of tap sampling and OCCT requirements in the LCR has resulted in significant increases in lead levels that are unaddressed and cause increased exposure to lead in drinking water for consumers in multiple water systems. As a result, this final rule modifies the National Primary Drinking Water Regulation (NPDWR) for lead by mandating service line replacement of lead and GRR service lines regardless of tap sampling results or corrosion control efforts.

The final LCRI requires mandatory replacement of both lead and GRR service lines. Under the 2021 LCRR, galvanized service lines that currently are or ever were downstream of lead or unknown service lines are considered to be ''galvanized requiring replacement'' service lines (§ 141.2) because the risk of high lead levels from these service lines is comparable to that of LSLs. Where the system is unable to demonstrate that a galvanized service line ''never was'' downstream of an LSL, it must categorize the service line as GRR. Galvanized service lines downstream of a lead connector are not required to be replaced because the risk is not as significant.

The final rule requires replacement of the entire service line, such that no portion of a lead or GRR service line remains. Partial lead or GRR service line replacements do not prevent known or anticipated adverse health effects and may cause adverse health effects; however, water systems may, in limited circumstances, need to conduct partial service line replacements as part of an emergency repair or to facilitate the completion of planned infrastructure work (separate from service line replacement activities, such as water main replacement) that would disturb the service line. Accordingly, the rule (1) prohibits water systems from conducting a partial lead or GRR service line replacement, except in the mentioned limited circumstances, and (2) requires water systems that conduct partial service line replacement to comply with notification requirements and other measures to mitigate the potential increased levels of lead as a result of the partial replacement (section IV.B.5).

The EPA is authorized to promulgate NPDWRs for PWSs and not for individual property owners. Under SDWA, a PWS is defined to include service lines (''distribution facilities'') if they are ''under control'' of the operator of the PWS and ''used primarily in connection with'' the system (SDWA section 1401(4)(A)). Therefore, the requirement in the final LCRI for PWSs to fully replace lead and GRR service lines applies only to service lines ''under control'' of the operator of the PWS and ''used primarily in connection with'' the system (section IV.B.3). Where a water system has access (*e.g.,* legal access, physical access) to conduct full service line replacement, the service line is under its control, and the water system must replace the service line. The LCRI does not delineate or establish the criteria for determining whether a system has access to conduct full service line replacement; that determination is governed by State or local law or water tariff agreements. The LCRI does not presume that customer consent is required for a system to gain access to conduct full service line replacement, yet the final rule recognizes that customer consent may be a prerequisite for access in some States and municipalities because, in some cases, service lines may only be under control of the water system when the customer provides consent to replace the customer-owned portion of the line. For that reason, where property owner consent is required under State or local law, the LCRI requires that the water system at a minimum make a ''reasonable effort'' (four attempts) to obtain property owner consent, and if the customer does not consent to the replacement, the system is not required to make further attempts to gain access to replace the service line until there is a change in property ownership.

The final LCRI establishes a deadline for water systems to complete their service line replacement program within 10 years (section IV.B.6), unless the State sets a shorter deadline for the system (section IV.B.7) or the system is eligible and plans to use a deferred deadline (section IV.B.8). The EPA

determined that a 10-year replacement deadline is feasible for the vast majority of water systems. However, the number and proportion of service lines requiring replacement can vary significantly among systems, making it difficult to identify a single deadline that represents the fastest feasible rate of replacement for all systems across the nation. In recognition of the strong possibility that some systems may be able to replace all of their lead and GRR service lines on a faster schedule, and to ensure that the rule meets the statutory standard for a treatment technique rule to ''prevent known or anticipated adverse effects on the health of persons to the extent feasible'' (SDWA section 1412(b)(7)(A)), the rule requires the State to set a shortened deadline if the State determines an earlier replacement deadline is feasible for the system.

On the other hand, to ensure that the rule's service line replacement deadline is not infeasible for a large number of systems, the final rule includes a pathway for a water system to defer its replacement deadline if the system meets specific threshold criteria established in the rule, while also requiring that the State periodically evaluate whether the deferred deadline and associated replacement rate the system identifies are the fastest feasible. Systems on a deferred deadline must regularly provide their State with information on the deadline and rate they consider as the fastest feasible to support their continued eligibility for a deferred deadline, and the State must periodically approve the system's continued use of the deferred deadline and associated replacement rate or determine a faster replacement rate. The EPA determined that setting a deadline of 10 years and incorporating procedures for reducing or extending that time frame on a case-by-case basis will ensure that the LCRI requires water systems to replace lead and GRR service lines as quickly as is feasible.

2. Mandatory Service Line Replacement

a. Rationale and Proposed LCRI Revisions

Lead service line replacement is a highly effective treatment technique for reducing lead levels in drinking water. It has been part of the EPA's NPDWR for lead since 1991. The LCRI makes a fundamental improvement to the LSLR treatment technique in the LCR NPDWR. The 1991 LCR requires systems that exceed the lead action level of 0.015 mg/L to replace LSLs systemwide at a mandatory replacement rate and allows these systems to stop replacing LSLs if the system ceases to exceed the action level. Under the 1991 LCR, systems could meet the mandatory replacement rate by partially replacing the system-owned portion of the LSL or through ''test-outs'' of individual service lines. However, research conducted after 1991 revealed that LSLR is highly effective at reducing lead levels in drinking water only where the entire LSL is replaced (Deshommes et al., 2017; Trueman et al., 2016; USEPA, 2011a). Thus, the 2021 LCRR maintained the approach of the 1991 LCR to require replacement if a system exceeds the action level of 0.015 mg/L, but reduced the replacement rate to three percent per year. The 2021 LCRR also required systems to replace the entire LSL, prohibited ''test-outs'', and required systems that exceed the lead trigger level of 0.010 mg/L to replace lead and GRR service lines at a goal-based replacement rate until the system ceases to exceed the lead trigger level. The 2021 LCRR also required water systems to provide notification and risk mitigation actions, including the provision of pitcher filters, when a service line replacement was conducted.

In the 2021 LCRR review, the EPA noted the ''urgency of fully removing all lead service lines'' and acknowledged that under the 2021 LCRR, millions of LSLs would be left in place, resulting in ''generations of Americans being at risk of significant lead exposure through their drinking water'' (86 FR 71577, USEPA, 2021b). During the 2021 LCRR review, the EPA listened to the nation's concerns on lead in drinking water through two days of public listening sessions, 12 community and stakeholder roundtables, and two co-regulator and elected official meetings. Nearly all commenters expressed support for the goal of full replacement of all the nation's LSLs. Commenters frequently suggested that the agency mandate replacement of all LSLs over a defined time (*e.g.,* 10 to 15 years) regardless of drinking water lead levels, ban all or certain partial service line replacements, and increase financial support for LSLR from the EPA and other Federal agencies (86 FR 71576, USEPA, 2021b). These stakeholder recommendations reflect a widespread awareness that LSLs pose a continued threat to public health that cannot be quickly and fully remedied through installation or re-optimization of CCT.

Consistent with the statutory direction when promulgating a treatment technique rule, the EPA proposed in the LCRI mandatory full service line replacement of all lead and GRR service lines, regardless of lead levels, because full replacement will prevent to the extent feasible the known or anticipated significant adverse threat to public health caused by the presence of these service lines. Mandatory full service line replacement prevents known adverse health effects because it reduces lead levels in drinking water more than other risk mitigation actions and treatment, such as OCCT, flushing, and public education. Even when a system's 90th percentile lead level is relatively low, full service line replacement is the only risk mitigation action that permanently removes the lead source and associated exposure risk. Although OCCT can be effective at reducing lead levels, it requires consistent proper operation, water quality parameter monitoring, and tap sampling to ensure it is effective at reducing lead levels. The EPA's experience with implementing the LCR for over 30 years has shown that improper implementation of tap sampling and CCT has resulted in significant increases in lead levels that were unaddressed and caused increased exposure to lead in drinking water for consumers in multiple water systems (*e.g.,* Edwards and Dudi, 2004; Lytle et al., 2020; Sarver, 2019; USEPA 2023f). Additionally, in recent years, systems ranging from small to large have experienced high lead levels despite having installed OCCT and maintained compliance with the LCR OCCT requirements (Masters et. al, 2021). In addition, when elevated levels of lead are detected, OCCT can take years to study and implement, and some systems, based on the water chemistry in their source water and distribution systems, may face challenges optimizing CCT, leaving their consumers at a higher risk of lead exposure compared to other communities. Recognizing that there is no known safe level of lead in drinking water, removing the largest sources of lead in drinking water (lead and GRR service lines where present) can reduce lead levels more than OCCT alone or in combination with public education and other risk mitigation activities. Furthermore, lead particulates can be released sporadically or as a result of service line disturbances even in systems that have well-operated OCCT and have measured generally low lead levels (Del Toral et al., 2013; Triantafyllidou et al., 2007). Thus, systems with 90th percentile levels below the lead action level or even the lead practical quantitation limit (PQL) may still have higher lead levels at individual sites served by lead and GRR service lines. These higher lead levels then result in increased lead exposure to the consumers served, but without any

requirement for systemwide follow-up actions such as CCT, public education, or LSLR. Cases of lead poisoning in children have been documented and attributed to drinking water in communities whose systemwide lead levels remained below the lead action level (Triantafyllidou et al., 2007; Triantafyllidou and Edwards, 2012).

i. Scope of Mandatory Service Line Replacement

The pre-2021 LCR did not require galvanized service lines to be replaced. A galvanized service line that currently is or previously was downstream of an LSL can contribute to lead in drinking water and resulting lead exposure to consumers (USEPA, 2020d) and, therefore, is considered a ''galvanized requiring replacement'' or GRR service line under the 2021 LCRR. Such GRR service lines can adsorb particulate lead initially mobilized from the upstream LSL, which can later be released back into the drinking water even after removal of the LSL (McFadden et al., 2011). The 2021 LCRR's inclusion of GRR service lines in the full service line replacement requirements ensures that all galvanized service lines currently or previously downstream of an LSL will be treated the same as an LSL under the service line replacement requirements (USEPA, 2020d). The proposed LCRI maintained the 2021 LCRR requirements for water systems to fully replace both lead and GRR service lines in their distribution systems.

The 2021 LCRR did not require replacement of galvanized service lines downstream of a lead connector. Galvanized service lines downstream of a lead connector may contribute lead into drinking water, but for the 2021 LCRR, the EPA did not find it appropriate to categorize these service lines as ''galvanized requiring replacement'' if these lines were not currently or previously downstream from an LSL (USEPA, 2020e). The EPA determined that it was not feasible to include a requirement for all systems to inventory lead connectors; therefore, they cannot be used to categorize a galvanized line as needing to be replaced under the LCRR (USEPA, 2020e). Additionally, the EPA did not want LSLR to be slowed by including galvanized service lines downstream of a lead connector in the total number of service lines requiring replacement. The 2021 LCRR requires lead connectors to be tracked and replaced as they are encountered during normal operations. The EPA did not propose in the LCRI to expand the definition of a GRR service line to include galvanized service lines downstream of a lead connector for the same reasons identified in the 2021 LCRR, but the agency did request public comment on this topic.

The EPA maintained the 2021 LCRR requirement to provide notification and risk mitigation measures, including pitcher filters, where full service line replacements were conducted to account for potential temporary increases in lead levels and further prevent the potential for known adverse health effects.

b. Summary of Public Comments and the EPA's Response

Many commenters supported the proposed requirement for water systems to replace lead and GRR service lines regardless of 90th percentile lead levels, highlighting the benefits of service line replacement to eliminate the risk of lead exposure posed by these significant lead sources. A few commenters stated that CCT is effective at reducing lead in drinking water, and therefore, mandatory service line replacement should not be required. After consideration of all the comments on this issue, the agency is requiring full replacement of lead and GRR service lines in the final rule. Replacement of lead and GRR service lines can substantially reduce the risk of lead exposure from drinking water because lead and GRR service lines can release lead even when systemwide lead levels are low (Triantafyllidou et al., 2007). Many water systems have proactively and voluntarily replaced LSLs (USEPA, 2024d), and the States of Illinois, Michigan, New Jersey, and Rhode Island have passed State laws and regulations requiring mandatory service line replacement independent of their tap monitoring results. Proactive and voluntary measures alone, however, cannot achieve replacement of 100 percent of lead and GRR service lines as quickly as feasible. A national mandate ensures public health protection for customers and consumers served by these service lines, including populations most sensitive to the effects of and communities disproportionately impacted by lead exposure, in States or water systems that do not have mandatory or proactive replacement programs.

One comment claimed that the proposed LCRI implicates the major questions doctrine, violates the commerce clause, is ''unworkable, underfunded, and unnecessary,'' and is arbitrary and capricious. The comment was based on the erroneous assumption that the LCRI regulates homeowners. The EPA disagrees with these characterizations of the proposed rule. Regarding the major questions doctrine, the comment claimed that the proposed LCRI implicates the major questions doctrine because of a substantial expansion in scope, stating that the ''greater the scope of the proposed action, the clearer that Congressional authorization must be'' (State of Kansas and Office of Attorney General of Kansas, 2024). Contrary to the comment's assumption, however, the EPA has authority under SDWA to regulate PWSs, not homeowners. As a result, the LCRI regulates PWSs and their distribution systems; it does not regulate indoor plumbing or require homeowners to take any actions. Moreover, the LSLR has been a central part of the LCR's treatment technique as far back as the original 1991 LCR and continuing through the 2021 LCRR. The LCRI's mandatory service line replacement requirement differs from the 1991 LCR and 2021 LCRR LSLR requirements in two ways, but neither difference represents an expansion of scope, so the major questions doctrine is not applicable to the LCRI's service line replacement requirements. The first difference is that the LCRI requires water systems to conduct a full service line replacement program independent of their tap monitoring results. The EPA notes that the 2021 LCRR and 1991 LCR both also require systems to conduct mandatory LSLR if a system exceeds the lead action level. The EPA does not view the LCRI's similar requirement to be an expansion of scope simply because the requirement applies independent of tap water monitoring results. Rather, imposing that requirement irrespective of tap monitoring results follows directly from SDWA's statutory mandate in light of current information. SDWA requires the EPA to promulgate NPDWRs that ''prevent known or anticipated adverse effects on the health of persons to the extent feasible'' (SDWA 1412(b)(7)(A)). As section IV.B.1 of this preamble explains, the EPA's finding that a mandatory, systemwide service line replacement program irrespective of tap monitoring results is essential to meet this statutory requirement, as the requirement is both feasible and prevents known or anticipated health effects of lead exposure from drinking water. For more information, see section IV.B.1 of this preamble.

The second difference between the LCRI and the LCR and 2021 LCRR is that the LCRI removes statements about service line ownership and responsibility to pay for full service line replacement. This change does not expand the scope of this rule; in fact, the EPA made the change to better align

the rule with SDWA's definition of a ''public water system'' and to clarify that the EPA is not directing through this rule how a water system should cover the costs of compliance with a NPDWR. How a system chooses to cover the costs or allocate the costs among users are matters of State and local law beyond the scope of the EPA's authority under section 1412 of SDWA. Because State and local governments regulate how water systems charge for services they provide to their customers, and the EPA has no explicit statutory authority to regulate in an NPDWR how water systems charge for their services, under the LCRI, the EPA has removed all statements in the prior rule about service line ownership and responsibility to pay.

The EPA disagrees that the LCRI is ''unworkable, underfunded, and unnecessary,'' particularly, the commenter's assertion that almost none of the cost of the rule is offset by the Federal Government. On the contrary, the Bipartisan Infrastructure Law (BIL) dedicates $15 billion in funding for service line inventory and replacement, and other Federal funding is also available to support implementation of the LCRI (see section III.G of this preamble). The final tranche of this BIL DWSRF funding for lead service line inventory and replacement will be appropriated in Fiscal Year 2026; however, funds will remain available for the EPA to obligate (*i.e.,* award) to States during the fiscal year in which they are appropriated and the following fiscal year, consistent with SDWA section 1452(a)(1)(C). After the second fiscal year of availability, any unobligated funds would be reallotted by the EPA to other States, as described in SDWA section 1452(a)(1)(E). The EPA notes that its economic analyses for the proposed and final rules do not account for external funding, such as from BIL, in the calculation of PWS costs and household cost to residents in CWSs. Furthermore, the agency also did not rely upon external funding, such as from BIL, to support its finding that the proposed and final rules are affordable in accordance with SDWA's definition of ''feasible'' in section 1412(b)(4)(D) for NPDWRs (''what may reasonably be afforded by large metropolitan or regional public water systems.'') The EPA finds the LCRI as a whole is affordable. For discussion on the affordability of service line replacement, please see section IV.B.6 and IV.B.9 of this preamble and the final rule's Technical Support Document (USEPA, 2024d). For CCT, please see section IV.F.1 of this preamble. For public education, please see sections IV.J.1 and IV.K.1 of this preamble. Note that the EPA is not including a discussion for source water treatment because those requirements are not being amended by this final rule. For the EPA's feasibility determination for source water treatment, see the final LCR (56 FR 26482, USEPA 1991). In addition, the EPA evaluated the cumulative impact of the LCRI requirements as a whole to household costs by system size, which are discussed in the EPA's Economic Analysis for the final LCRI (USEPA, 2024c) in section 4.3.7.3 and shown in Exhibit 7 and Exhibit 8 in section VI.D.2 of this preamble.

The EPA disagrees that the LCRI is ''arbitrary and capricious.'' The comment claimed the rule would cost the States, PWSs, and households billions ''without resulting in any measured benefit, and the agency lacks clear Congressional authorization to impose these burdens, and the proposed rule does not adequately explain why it is departing from past practice'' (State of Kansas and Office of Attorney General of Kansas, 2024). The claim that the proposed rule had no measured benefit is simply untrue. The final rule's economic analysis showed that the monetized net annualized incremental benefits range from $12.0 billion to $23.2 billion (in 2022 dollars, discounted at two percent) as well as many unquantified benefits, and these benefits justify the costs (USEPA, 2024a, chapter 6, section 6.3). As described above, the EPA has clear authority to promulgate the LCRI under SDWA section 1412. The proposed rule also explained at length the factors it considered when proposing a mandatory service line replacement requirement irrespective of lead levels (USEPA, 2023a).

Some commenters suggested that water systems' mandatory service line replacement programs should extend to replacement of the lead connector because they are a source of lead in drinking water. The EPA agrees that lead connectors can contribute lead into drinking water and encourages their replacement to reduce lead in drinking water. The LCRI maintains the 2021 LCRR's requirement that lead connectors must be replaced when they are encountered by the water system (*e.g.,* during water main replacements). The EPA disagrees, however, that the LCRI should require systems to locate and then replace all connectors in the system. Lead and GRR service lines, where present, are the most significant source of lead in drinking water. Incorporating a requirement for replacement of lead connectors into the 10-year service line replacement could take significant time and resources away from replacing lead and GRR service lines. Systems would be required to identify where all lead connectors are and then replace them in addition to the lead and GRR service lines. Furthermore, this would not be feasible within the 10-year replacement timeframe required for replacing lead and GRR service lines, and adding this requirement would, therefore, delay replacement of the most significant sources of lead exposure in drinking water. The LCRI requires that the system's inventory include information about lead connectors based on available information, but the rule does not require systems to engage in a proactive effort to collect additional information to locate all lead connectors that may be in the system. Many water systems do not have information on the presence or location of lead connectors in their distribution system, but systems conducting a service line inventory may find that they have records of connectors, and systems may encounter connectors while conducting service line replacements as well as conducting repairs and maintenance work. Accordingly, the LCRI requires water systems that do have records on the location of lead connectors to include them in their inventory and replace connectors encountered during service line replacement and other work.

Some commenters argued that galvanized service lines downstream of a lead connector should be classified as requiring replacement (a ''GRR'') under the system's mandatory service line replacement program, while other commenters stated that including such lines in mandatory replacement requirements could significantly impact a system's ability to complete their service line replacement program within 10 years. The EPA disagrees with including galvanized service lines downstream of a lead connector in the mandatory replacement program. In order to prioritize replacement of the most significant contributors of lead in drinking water, the final rule does not define galvanized service lines that are or were downstream of a lead connector as GRR service lines, and, thus, they are not inventoried or replaced as such (see section IV.O.3 of this preamble).

c. Final Rule Requirements

The final LCRI requires water systems to conduct full service line replacement of lead and GRR service lines regardless of their 90th percentile lead levels. Partial service line replacement and ''test-outs'' at individual service lines do not count towards mandatory full

service line replacement. Lead connectors must be replaced where encountered during normal system operations and service line replacement unless the connector is not under the control of the system.

3. Service Lines Under the Control of the System

a. Rationale and Proposed LCRI Revisions

The EPA is authorized by SDWA to regulate PWSs to include any ''distribution facilities under control of the operator of such system and used primarily in connection with such system'' (SDWA section 1401(4)(A)). In some cases, service line ownership is shared between customers and PWSs; in other cases, service lines are owned in their entirety either by customers or by PWSs and used by PWSs to distribute water. Under the LCR, a water system is required to replace only the portion of the service line that is owned by the system and offer to replace the portion of the line not owned by the system. As a result, for the LCR, ''under control'' of the water system was interpreted as ownership of the service line. The LCR does not identify how ownership of the service line would be determined. The LCR explicitly states that a water system is not required to pay for replacement of the portion of the service line that is not owned by the system, or to conduct the replacement of the privately-owned portion of the service line where the owner chooses not to pay for replacement of the privately-owned portion of the line, or where replacing the privately-owned portion of the service line is precluded by State, local, or common law.

Under the 2021 LCRR, water systems are required to conduct full LSLR, and only full LSLR counts towards a system's mandatory replacement rate. A system remains in compliance if it is unable to meet the mandatory replacement rate because a customer refuses to participate in the replacement program or does not respond to the system after two good faith efforts to reach the customer. Under the 2021 LCRR, a system must conduct a full service line replacement regardless of ownership if the customer consents to the replacement of their portion of the line. However, the 2021 LCRR does not require a water system to pay for replacement of the portion of the line that is ''customer-owned'' and not owned by the system. The cumulative effect of these provisions is that a water system is required to conduct full LSLR where the customer consents to the replacement and agrees to cover the cost of the replacement or the water system chooses to cover the full cost of the replacement.

The proposed LCRI builds on 2021 LCRR's requirement to conduct full LSLR, but the proposed rule did not make any assumptions about customer consent or payment requirements or assume that there are no other potential barriers to the system's ability to access the service line to conduct a full replacement. Under the proposed LCRI, full replacement of all lead and GRR service lines is required wherever a system can access the service line in order to conduct a full replacement. The EPA does not have the authority under SDWA section 1412 to specify whether customer consent is required for a water system to gain access to a service line, nor does the EPA have the authority under SDWA section 1412 to determine that a water system is or is not responsible for the cost of the service line, or how those costs should be allocated among rate payers, as these are matters determined by State or local law. In addition, the EPA recognizes that there may be other barriers that prevent a system from gaining access to conduct a full service line replacement on a case-by-case basis (*e.g.,* threats to the safety of system personnel due to site characteristics). Accordingly, in the proposed LCRI, the EPA proposed to treat a service line as ''under control'' of the system wherever the system has access (*e.g.,* legal access, physical access) to conduct a full service line replacement.

Under the proposed LCRI, a water system's obligation to conduct full service line replacement extends to those service lines under control of the system, *i.e.,* those service lines that the system can access to conduct a full service line replacement. If a system does not have access to conduct a full service line replacement, it is not required by the rule to replace the lead or GRR service line, but it must document the reasons that the water system does not have access and include any specific laws, regulations, and/or water tariff agreements that affect the system's ability to gain access to conduct full service line replacement identified in the service line replacement plan. The system must provide this documentation to the State.

The proposal also included requirements for systems to make reasonable efforts (four attempts using two different communication methods) to obtain property owner consent where a water system has legal access to conduct full service line replacement only if the property owner consent is obtained, where the number of attempts was doubled relative to the 2021 LCRR requirement and the use of multiple communication methods was incorporated to better reach property owners and increase participation in service line replacement programs (USEPA, 2021b). If the system is unable to obtain property owner consent after four attempts, the system is not required to replace the service line. However, the system would need to offer full service line replacement within six months of any change in property ownership and make four attempts to obtain property owner consent within one year of the change in property ownership. The EPA proposed that requirement to continue to apply until a water system no longer has lead, GRR, or unknown service lines in their inventory. The purpose of this requirement is to ensure that water systems give property owners an adequate notice and opportunity to provide any necessary consent for service line replacement. The EPA also proposed that any water system that was not able to obtain property owner consent after making a reasonable effort must certify to the State the number of service lines not replaced due to property owners not providing consent where consent is required by State or local law.

The EPA did not propose to delineate the prerequisites or elements of ''access'' that a system would need to conduct full service line or connector replacement because of the wide variation of relevant State and local laws and water tariff agreements as well as the potential for these to change over time. The proposed LCRI also emphasized the many possible approaches water systems could use to overcome access barriers to conduct full service line replacement, some of which may be unique to the system (88 FR 84925, USEPA, 2023a).

The proposed LCRI included several rule provisions designed to increase transparency and incentivize systems to find ways to overcome barriers to a water system's ability to gain access to conduct full service line replacement. First, the EPA proposed to require water systems to identify legal barriers (*e.g.,* laws, ordinances, and water tariff agreements) to gaining access for full service line replacement in their service line replacement plans and make the plans publicly accessible, which may facilitate action by the community served to overcome those barriers (see section IV.C of this preamble for more information on the replacement plan). Second, the proposed rule provides a pathway for systems to defer optimizing or re-optimizing CCT and conducting costly and complex pipe rig/loop

studies by replacing all lead and GRR service lines in their distribution system within five years at a rate of a minimum of 20 percent of lines per year. To take advantage of this proposed pathway, systems must have access to fully replace all lead and GRR service lines in their inventories and identify all unknown service lines within five years. Third, the EPA expects systems to be motivated to find ways to access each lead and GRR service line for replacement because removing these significant lead sources can reduce the system's 90th percentile lead level, which, in turn, would decrease the likelihood of a lead action level exceedance and the subsequent need to (1) install (and maintain) or re-optimize OCCT (that could involve costly CCT studies), (2) replace lead-bearing plumbing or install point-of-use filters (for small systems that choose not to install or re-optimize CCT), and (3) make filters available along with additional public outreach if the system meets the requirements for multiple lead action level exceedances. With the most significant lead sources replaced, systems would also have a lower likelihood of measuring higher lead levels, which are tied to the Tier 1 public notification requirements after a lead action level exceedance (also referred to as the 24-hour public notification) and Distribution System and Site Assessment (DSSA) requirements. Fourth, systems without lead and GRR service lines that exceed the action level due to other sources of lead (*i.e.,* premise plumbing) would be able to conduct less costly, complex, and time-consuming CCT studies, such as metal coupon tests, should they be required to initiate OCCT steps. Fifth, the more rigorous sampling of the first- and fifth-liter samples at LSL sites could also be avoided where systems accessed and replaced all lead and GRR service lines. Sixth, systems that have replaced all their lead and GRR service lines would have to meet fewer public education requirements. For example, systems without lead, GRR, or unknown service lines would not have to conduct the proposed notification and risk mitigation requirements after a service line disturbance or the annual notification of service line material type to consumers served by these lines. Seventh, public education requirements in the LCRI are designed to inform consumers about the adverse health effects associated with lead in drinking water and risk reduction measures, including full service line replacement, which may result in more customers providing access (where property owner consent is required for legal access).

b. Summary of Public Comments and the EPA's Response

The EPA received many comments on the provision in § 141.84(d)(2) of the proposed LCRI stating that ''[w]here a water system has access (*e.g.,* legal access, physical access) to conduct full service line replacement, the service line is under its control, and the water system must replace the service line.'' On one end of the spectrum, several commenters stated that the EPA's interpretation of ''control'' as access is beyond the EPA's authority under the SDWA. Many of these commenters argued that the EPA should not change its prior interpretation of ''control'' as exclusively tied to ownership. Some of these commenters argued that service lines, or service lines not owned by the system, are not covered by the definition of ''public water system'' in section 1401(4) of SDWA at all and are therefore beyond the reach of a NPDWR; several others asserted that control should be interpreted as ownership and without ownership, or if the service line is on private property, then the service line is not under control of the system. Several commenters raised practical and policy concerns associated with conducting a lead service line replacement on private property. On the other end of the spectrum, several commenters stated that the EPA's interpretation of ''control'' as access is too narrow and will create a loophole allowing systems to avoid conducting service line replacement wherever they determine that they lack access. These commenters argue that the EPA should structure the rule to either deem service lines as under control of the system (or require States to do so as a condition of primacy) or create a rebuttable presumption that service lines are under control of the system, as promulgated by the EPA in the 1991 LCR.

The EPA disagrees with commenters on both ends of the spectrum. Commenters advocating that the EPA interpret ''public water system'' to include either no service lines or only service lines ''owned'' by the system ignore the statutory definition of ''public water system'' which is tied to control, not ownership. Moreover, these comments fail to comport with both SDWA's mandate in section 1412(b)(7)(A) for the EPA to identify treatment technique requirements that prevent known or anticipated adverse effects to the health of persons to the extent feasible and SDWA's requirement in section 1412(b)(9) for any revision of an existing NPDWR to maintain, or provide for greater protection of the health of persons. Full lead service line replacement prevents known or anticipated adverse effects to the health of persons and it is feasible even where water systems do not own any portion of the service line. Partial service line replacement does not prevent known or anticipated adverse effects to the health of persons, and may result in continued exposure and short-term increased levels of lead in drinking water. For those reasons, the EPA promulgated the 2021 LCRR to require water systems to conduct full service line replacements even if they do not own the service line, as long as the customer provides consent and to ensure that partial replacements would not be conducted as a result of a NPDWR. The LCRI similarly requires full service line replacement even when the system does not own the service line and it does not require or allow partial service line replacement to meet the replacement requirement of the rule and in doing so, the EPA is consistent with the statutory definition of ''public water system'' and meets the requirements in section 1412(b)(7)(A) and 1412(b)(9). None of the commenters that advocate for the EPA to limit the service line replacement requirements to portions of the service line owned by the system, or give credit for partial replacements, explain how such a rule would be consistent with section 1412(b)(7)(A) and 1412(b)(9).

The term ''public water system'' is defined in SDWA section 1401(4) as ''a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals. Such term includes (i) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (ii) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system.''

The plain language of the first sentence of this definition includes service lines because they are ''pipes'' used for the ''provision of water to the public'' through ''service connections'' that ''serve . . . individuals.'' The second sentence explains further that the definition includes ''distribution facilities *under control of the operator of such system*'' (emphasis added). Service lines are used to distribute water to consumers and as such, are part of the system's ''distribution facilities.'' Therefore, the EPA does not agree with commenters that state that service lines

are not part of the definition of ''public water system'' and thus outside of EPA jurisdiction because they are not covered by either the first or second sentence. Such an interpretation would be inconsistent with the statutory text and the EPA's longstanding implementation of the statutory definition of ''public water system.'' Service lines are pipes through which drinking water flows to the customer as part of distribution facilities under control of the operator. Service lines are directly connected to the water mains that are directly connected to the treatment facility or storage facilities. These are all interconnected to convey drinking water to the building for consumption and the flow of drinking water through these pipes is controlled by the water system.

Moreover, there is nothing in the definition that suggests the distribution facility must be owned by the public water system or any basis to read that requirement into the phrase ''under control of the operator of such system.'' Public water system operators may not be the same entity that ''owns'' the system of pipes, service connections, collection, treatment, storage, and distribution facilities. Therefore, the question is not whether the public water system ''owns'' the service line, but whether it is ''under control of the operator of the system.''

In addition, the interpretation of the ''control'' within the definition of ''public water system'' to mean ''access'' is consistent with the dictionary definitions of the terms ''control'' and ''under control''. As a verb, ''control'' means ''to exercise restraining or directing influence over'' (Merriam-Webster Dictionary. Retrieved August 27, 2024, from *https://www.merriam-webster.com/dictionary/control#dictionary-entry-1*). As a noun, ''control'' means ''an act or instance of controlling'' and also ''power or authority to guide or manage'' (Merriam-Webster Dictionary. Retrieved August 27, 2024, from (n) *https://www.merriam-webster.com/dictionary/control*). The phrase ''under control'' is defined in the Oxford English Dictionary as ''subject to a restraining or controlling influence, esp. so as not to cause damage or harm; (of a situation) so as to be managed competently or dealt with successfully.'' Oxford University Press (2024, March). ''under control'' in control (n). *Oxford English Dictionary.* Retrieved August 27, 2024, from *https://doi.org/10.1093/OED/6427628422.* The interpretation of service lines as ''under control'' of a water system whenever the system has ''access (*e.g.,* legal access, physical access) to conduct full service line replacement'' is consistent with these definitions. If the water system can, as a factual matter, gain access over the service line to disconnect it from use and replace it with a new line, then the water system is directing influence over the line and exercises power or authority to manage it and it is subject to a restraining or controlling influence of the system—*i.e.,* ''under control'' of the system.

At the same time, the EPA does not have the authority to assert in an NPDWR that a water system has ''control'' of any particular part of the system's distribution facilities, such as all service lines. Commenters that advocate for a rule that ''deems'' all service lines as under control of the system (or requires states to do so as a condition of primacy) disregard the limits on the EPA's authority to establish a ''primary drinking water regulation'' that ''applies to public water systems'' (SDWA 1401(1)(A)) and establish requirements under section 1413 of SDWA for ''primary enforcement responsibility for public water systems.'' The EPA cannot ignore the definition of ''public water system'' in section 1401(4) of SDWA, which, as explained above, applies only to the extent the operator has ''control'' of the system. The EPA cannot simply declare—contrary to the record (LSLR Collaborative, n.d.b) (see comment IDs EPA–HQ–OW–2022–0801–0845 and EPA–HQ–OW–2022–0801–1328 in the LCRI docket EPA–HQ–OW–2022–0801 for example)—that all service lines are ''under control'' of a water system for purposes of replacement. Instead, whether a service line is under the control of the water system will depend on: (1) The relevant laws that authorize and/or condition a water system's ability to exert control over the line in order to replace it and (2) whether, as a factual matter, a water system can gain physical access to the service line in order to conduct a full replacement. Accordingly, as noted above, the rule does not make any assumptions about customer consent or payment requirements or assume that there are no other potential barriers to the system's ability to access the service line to conduct a full replacement. Instead, under the LCRI, full replacement of all lead and GRR service lines is required wherever a system can access the service line in order to conduct a full replacement and not where a system does not have access to conduct full service line replacement. See § 141.84(d)(2).

Accordingly, the EPA rejects the approaches advocated by commenters on both ends of the spectrum that would require the EPA to go beyond the plain language of the statute to use a narrower or broader definition of ''public water system'' to reduce or expand a water system's responsibility for replacing lead service lines. In the final rule, the EPA is requiring full lead service line only ''[w]here a water system has access (*e.g.,* legal access, physical access) to conduct full service line replacement'' to meet the mandates of section 1412(b)(7)(A) and 1412(b)(9) while staying within the bounds of the EPA's authority under SDWA to regulate ''public water systems'' as defined in section 1401(4).

Some commenters agreed with the EPA's interpretation of control to mean access. Other commenters agreed with the EPA's proposed approach, but they described it as vague and subject to different interpretations. Commenters recommended that the EPA include specific criteria to specify when a water system has access to prevent systems from defining access too narrowly in attempts to avoid mandatory service line replacement. Another commenter provided an example of specific access criteria: (1) whether the system can safely enter the property, (2) whether the system can safely conduct the replacement, and (3) whether the system has obtained the property owner's consent, if consent is required for access. The EPA agrees that these criteria are reasonable and appropriate for a system to consider in evaluating whether it has the requisite access. In fact, physical access is explicitly referenced in the regulatory text: ''Where a water system has access (*e.g.,* legal access, physical access) to conduct full service line replacement, the service line is under its control.'' However, the EPA disagrees that the final rule should include mandated criteria applicable to all water systems because a water system's ability to obtain access to a service line to conduct a full service line replacement is governed by State law, local law, and/or water tariff agreements and may include requirements for customer cost sharing for to conduct the replacement. Thus, systems should have some flexibility to accommodate specific circumstances affecting access that this rule may not be able to predict. More prescriptive criteria for determining where a service line is under the control of a system than ''access to conduct full service line replacement'' might be overly broad and, therefore, beyond the EPA's authority to regulate, or the criteria may be too narrow and, therefore, not adequately protective of public health to meet the requirement of SDWA section

1412(b)(7)(A) to prevent known or anticipated adverse health effects of persons to the extent feasible.

Some commenters were concerned that defining control as where systems have access could result in water systems leaving LSLs unreplaced by claiming a lack of access to any portions of LSLs, such as those on private property. The final rule is structured to mitigate this concern. The rule requires replacement of all lead and GRR service lines under the control of the water system. Where a water system has access to conduct full service line replacement, the service line is under its control, even if it is located on private property, and the water system must replace the service line. For service lines in which the water system does not have access to conduct a replacement, the water system must document the reason for lack of access and provide this documentation to the State. Submitting documentation to the State explaining why the water system does not have access to a service line provides the information needed for oversight of this rule requirement and allows States to ensure water systems are replacing lines in which they have access.

Where the system has access to conduct full replacement only if property owner consent is obtained, the system must make a reasonable effort to obtain consent through at least four outreach attempts using two different methods of communication. The EPA expects this outreach will support communication between property owners and the water system to improve access. In addition, the EPA is finalizing requirements in the LCRI that provide incentives for systems to overcome barriers to access or may increase a water system's ability to gain access to conduct full service line replacement, such as deferring an OCCT study to replace all lead and GRR service line in the distribution system and identifying legal barriers in laws, ordinances, or water tariff agreements to service line access in the replacement plan. (See section IV.B.3.a of this preamble). The EPA provided several examples in the proposal on a range of strategies that systems, municipalities, and States have used to overcome both financial and non-financial barriers to full service line replacement in the proposed LCRI, even where laws require customers to provide consent or payment to replace their portion of the service line (88 FR 84926, USEPA 2023a). Example strategies are also discussed later in this section. Additionally, funding and non-regulatory actions can increase water system access to service lines for full replacement (see section III.G of this preamble).

Where water systems are unable to gain access to conduct a full service line replacement, water systems are not in violation of the treatment technique if they fail to replace these service lines by their replacement deadline because they are not under the control of the system. Water systems must continue to publish the addresses of those service lines in the publicly accessible inventory, deliver annual notification of service line material to the consumer, and make a reasonable effort to gain access of the service line for full service line replacement when the property changes ownership.

Some commenters recommended that the EPA interpret ''under control of'' the water system as including only those service lines that are owned by the system, as the EPA did in the 2000 LCR Minor Revisions (USEPA, 2000a). The EPA disagrees with these commenters. The EPA interprets the phrase ''under control of'' as distinct from ''ownership'' in SDWA. The term ''control'' is not defined in SDWA, and use of the phrase ''under control of'' instead of the more commonly used phrase ''owned by'' suggested that Congress had a different concept in mind. Moreover, the EPA has never concluded that SDWA mandates an interpretation of ''control'' to mean ownership exclusively. In the 1996 proposal to revise the 1991 LCR, the EPA considered two different interpretations of ''control'', one interpretation that would require replacement of the system-owned portion of the service line along with an offer to replace the customer-owned portion at the customer's expense, and another interpretation that would require replacement of the system-owned portion of the service line as well as any additional portions the system has the authority to replace. In the final LCR published in 2000, the EPA expressed concern that the broader definition of control ''could result in unintended delays and other complications'' and, therefore, the ''EPA believe[d] it [was] appropriate to equate 'control' with 'ownership' to eliminate potential legal confusion and delays in implementing the Rule'' (65 FR 1950, 1962, USEPA, 2000a).

As discussed in the LCRI proposal, since the 2000 LCR rulemaking, there are many examples of water systems that have carried out successful service line replacement programs to fully replace LSLs regardless of ownership status. There are several documented examples of systems that have completed or made substantial progress conducting full replacement of service lines not entirely owned by the system, including Denver, CO, Flint, MI, Trenton, NJ, York, PA, and projects in multiple communities through the Massachusetts Water Resource Authority (USEPA, 2024d). Additionally, the proposed LCRI includes several examples of communities that changed local ordinances to facilitate full replacement in areas where service lines are not entirely owned by the system (88 FR 84926, USEPA, 2023a). Additionally, States have passed laws to facilitate full service line replacement. For example, Pennsylvania passed laws to allow rate funds to be used to replace LSLs on private property that did not change ownership of the service line or impose any other duties following system funding or replacement of the service line, unless determined to be necessary by the system (Pennsylvania General Assembly, 2017). The proposed LCRI also describes the two laws New Jersey passed to facilitate full service line replacement both financially and with respect to private property access. The laws grant municipalities the authority to adopt an ordinance that allows water systems to enter private property to conduct LSLR (Ruiz, 2019) and authorizes them to replace LSLs on private property if the work is an environmental infrastructure project and funded either by loans from the New Jersey Infrastructure Bank or by loans issued through the New Jersey Department of Environmental Protection (State of New Jersey, 2020). Since the proposed LCRI was published, an Indiana law requires water utilities to work with the owners of buildings, structures, or dwellings with LSLs to replace their portions of the service line upon request by the water utility (Indiana General Assembly, 2024). If the owner refuses or does not respond, the utility or the utility's agent may enter the property to replace the customer's portion of the LSL without the owner's permission or to disconnect water service to the property if prevented by the owner. Under the law, the non-owner occupant of a property can grant physical access for service line replacement, where the utility and occupant are ''held harmless'' by and not liable to the property owner with respect to the entry or replacement (Indiana General Assembly, 2024). These State laws do not change ownership of the service line but show that water systems can obtain access to conduct full service line replacement without owning the line.

Some commenters recommended that the EPA explicitly state in the rule that water systems control all service lines based on an assumption that without that assertion, LSLs will remain in use around the country. The EPA does not have the authority to assert in an NPDWR that a water system has control of any particular part of the system's distribution facilities, such as all service lines. The examples provided in the previous paragraph from Pennsylvania, New Jersey, and Indiana highlight ways States and local governments can change laws or ordinances to facilitate water system access to conduct full service line replacement. In addition, the EPA is finalizing several rule requirements and flexibilities that may lead to an increase a water system's access to conduct full service line replacement (see section IV.B.3.a of this preamble).

Finally, the significant Federal funding sources, such as the $15 billion from the BIL, can help increase water system access to conduct full service line replacement. For example, property owners may be more likely to agree to replace their portion if the cost is subsidized or offered at no cost. (See section III.G of this preamble on funding for service line replacement.) Additionally, the final rule's public education requirements may increase customer access where property owner consent is legally required to obtain access to conduct a full service line replacement. (See sections IV.B.3.a and IV.J.2.a of this preamble and ''Public Education and Engagement'' in the proposed LCRI preamble (88 FR 84921, USEPA, 2023a) for more information and examples of systems that have increased customer participation in service line replacement programs through their public education.)

c. Final Rule Requirements

In the final rule, where a water system has access (*e.g.,* legal access, physical access) to conduct full lead or GRR service line replacement, the service line is under its control, and the system must replace the service line. Where a water system does not have access to conduct full service line replacement, the water system is not required by this rule to replace the line, but the water system must document the reasons why the water system does not have access. The EPA is not including specific provisions to delineate where a system has access to conduct a full replacement. Annually, the system must submit to the State documentation of the reasons for each line that is not replaced due to lack of access. Along with other information listed in § 141.90(e)(8), the system must annually submit to the State the total number of lead and GRR service lines that are not replaced because the system does not have access to conduct full replacement. The water system must identify any laws, regulations, and/or water tariff agreements that affect the water system's ability to gain access to conduct full lead and GRR service line replacement, including the citation to the specific laws, regulations, or water tariff agreement provisions and include them in their service line replacement plan as well as the publicly accessible version of the plan.

The final LCRI requires that where a water system has access to conduct a full service line replacement only if property owner consent is obtained, the water system must make a ''reasonable effort'' to obtain property owner consent. A reasonable effort must include at least four attempts to engage the property owner using at least two different methods of communication (*e.g.,* in-person conversation, phone call, text message, email, written letter, postcard, or information left at the door such as a door hanger) before the applicable deadline of mandatory service line replacement. The State may require systems to conduct additional attempts and may require specific outreach methods to be used. Within six months of any change in ownership of the property, the water system must offer full service line replacement to any new property owner. Within one year of any change in ownership of the property, the system must make a ''reasonable effort'' to obtain the property owner's consent. The EPA expects that changes in property ownership have likely occurred when water service is initiated or service is transferred such as when there is a customer name or an account change on a water billing account. If the water system is unable to obtain consent from the current property owner after making a ''reasonable effort'' to obtain it, the water system is not required under the LCRI to replace the line. This requirement applies to systems until all lead and GRR service lines are replaced in the distribution system. Annually, the system must submit to the State documentation of each reasonable effort conducted where the system was not able to obtain property owner consent where consent is required by State or local law. The submission for each documented reasonable effort is required by the January 30 after the system has completed all four (or more, if required) attempts to engage the property owner as described in § 141.84(d)(3)(i) and, if applicable, the January 30 after the specified timeframe (*e.g.,* within one year of any change in property ownership).

4. Payment for Full Service Line Replacement

a. Rationale and Proposed LCRI Revisions

As noted above, the 1991 LCR and 2021 LCRR include statements affirming that, while water systems must offer to replace the customer's portion of a service line, systems are not required to bear the cost of replacement of the portion of the LSL not owned by the water system. For the LCRI proposal, the EPA removed these statements from the regulation, recognizing that how a water system covers the costs of compliance with an NPDWR cannot be Federally mandated by the EPA in an NPDWR under SDWA. The EPA does not have statutory authority to allocate payment; rather, State and local governments regulate how water systems provide and charge for services to their customers. Consistent with this approach, the proposed rule did not include a prohibition on cost sharing for full service line replacement. While the EPA strongly encourages systems to offer full service line replacement at no cost to the customer, a prohibition on cost sharing in the rule is outside the EPA's authority and would result in a lengthy legal challenge creating uncertainty that would delay implementation of the rule and further delay service line replacement.

b. Summary of Public Comments and the EPA's Response

Some commenters recommended that the EPA require water systems to pay for full service line replacement or to prohibit cost sharing, highlighting potential environmental justice concerns for customers who are unable to afford to replace their portion of the service line. The EPA strongly encourages water systems to offer full service line replacement at no cost to the customer; SDWA does not provide authority for the agency to direct how a water system covers the costs of compliance with an NPDWR and the EPA has not used its section 1412 authority under SDWA to do so. This is a matter of State and local law, as the State and local governments regulate how water systems provide and charge for services to their customers. The EPA remains concerned, as it did in the proposal, that any attempt to use an NPDWR to assert Federal authority over how water systems charge for their services would be met with a protracted

legal challenge that would delay implementation of the rule and further delay service line replacement. Thus, the final rule does not prohibit cost sharing or mandate how water systems must pay for customer-side service line replacements.

The EPA strongly encourages customer-side service line replacement to be offered at no direct cost to the customer wherever possible. Subsidizing customer-side service line replacement in whole or in part may result in higher overall participation in the replacement program and potentially reduce disparities created where service line replacement is less accessible to lower-income individuals (Baehler et al., 2022; Environmental Defense Fund (EDF), 2020). The EPA highlights the significant Federal funding available that can facilitate full service line replacement (see section III.G of this preamble).

c. Final Rule Requirements

The final rule eliminates regulatory text stating that water systems are not required to bear the cost of replacement of the portion of the service line that they do not own. The EPA strongly encourages water system to offer full service line replacement at no direct cost to the customer wherever possible, but this is not a requirement of the LCRI. The final LCRI remains neutral on how water systems provide and charge for services to their customers.

5. Partial Service Line Replacement

a. Rationale and Proposed LCRI Revisions

Research shows that partial service line replacement does not reliably reduce lead levels in drinking water and can sometimes temporarily increase these levels (Deshommes et al., 2017; USEPA, 2011a). For the LCRI, the EPA proposed prohibiting partial service line replacements unless conducted in coordination with emergency repair or planned infrastructure projects that affect the service line. Planned infrastructure work could include water infrastructure or capital improvement projects that do not solely replace lead and GRR service lines as part of a service line replacement program. Examples include, but are not limited to, water main replacement, meter replacement, and transportation-related construction projects. The proposed prohibition was intended to ''ensure that the rule itself does not cause additional partial replacements to be conducted solely for the purpose of LSL or GRR service line replacement'' (88 FR 84918, USEPA, 2023a), which could cause negative public health outcomes. While partial service line replacement has the potential to temporarily increase lead levels in drinking water, an outright ban on the practice could be infeasible (USEPA, 2020e). For example, water systems conducting emergency main replacement may require the removal of at least a portion of the LSL due to the alignment or spacing requirements to connect the new main with existing service lines (USEPA, 2020e; USEPA, 2023i). Additionally, in the case of some emergency repairs, a partial replacement may be necessary to ensure prompt restoration of water service to the consumer. Water service is critical to public health as it provides water for drinking, cooking, and sanitation. Water systems that conduct full service line replacement in coordination with planned infrastructure work may realize public health benefits, efficiencies, and cost savings; however, the agency recognizes that there may be barriers to a system's access to service lines on private property. In the proposed rule, the EPA sought comment on this approach to limiting, but not prohibiting all partial service line replacements, and whether the exclusion should be limited to only certain types of infrastructure work.

Lead and GRR service lines are likely to undergo significant disturbance as a result of planned infrastructure work or emergency repairs, thereby increasing the risk from all lead sources that remain following the emergency repair or infrastructure work. To address the increased risk from this disturbance, the EPA proposed to retain the 2021 LCRR notification and risk mitigation requirements for partial service line replacement, including requirements for the system to notify the consumer of the risks of the partial replacement and actions they may take to minimize lead exposure, provide a pitcher filter or point-of-use device certified to reduce lead in drinking water and six months' worth of replacement cartridges, provide flushing instructions, and offer to take a tap sample between three and six months following the completion of the partial replacement. The LCRI also proposed to require water systems conducting a partial replacement to install a dielectric coupling separating the remaining portion of the service line and the new portion of the service line, unless the new portion is made of plastic. A dielectric coupling between the replaced line and the partial lead or GRR service line reduces the risks of galvanic corrosion between lead and other metallic pipes that causes lead release as documented in previous lab-scale studies (DeSantis et al., 2018; Triantafyllidou and Edwards, 2011; Wang et al., 2012). Multiple laboratory experiments using harvested pipes showed substantial decreases in lead release when the electric connection is broken or dielectric couplings are inserted (Clark et al., 2013; St. Clair et al., 2016; Wang et al., 2013), demonstrating the value of requiring the insertion of such couplings. This is consistent with the EPA's Science Advisory Board (SAB) 2011 report that ''[i]nsertion of a lead-free dielectric eliminates galvanic corrosion at the new pipe junction by breaking the electrical circuit between the new and old pipes,'' concluding that ''insertion of a dielectric will likely reduce lead levels in tap water''; although, the SAB also noted that ''it cannot confidently estimate the magnitude of the reductions because the contribution of galvanic corrosion and depositional corrosion to drinking water lead levels has not been quantified'' (USEPA, 2011a).

The EPA proposed in the LCRI to retain the 2021 LCRR requirements that apply to a water system when a customer initiates a partial replacement of an LSL. If the water system is notified that a customer intends to conduct a partial lead or GRR service line replacement, the system must replace the remaining portion of the line within 45 days (or notify the State within 30 days to complete the replacement no later than 180 days) of the date the customer conducted the partial replacement and provide notification and risk mitigation measures. The EPA also proposed in the LCRI to retain the 2021 LCRR requirement that, if the system is notified or otherwise learns of a customer-initiated replacement that has occurred within the previous 6 months, the system must replace any remaining portion of the affected service line within 45 days of becoming aware of the replacement and provide notification and risk mitigation measures.

b. Summary of Public Comments and the EPA's Response

Some commenters agreed with the proposed approach of banning partial service line replacement unless conducted as part of an emergency repair or in coordination with planned infrastructure work, stating that partial replacement may be necessary in some emergency scenarios and in coordination with planned infrastructure work; for example, if a disturbance to the service line is unavoidable and the water system cannot gain access to conduct a full lead

service line replacement (*e.g.,* a customer refuses to allow replacement of the customer-owned portion of the service line). Other commenters thought partial replacements should be banned in all situations, including as part of an emergency repair, or that they should be banned in all situations except as part of an emergency repair. These commenters highlighted the potential for partial replacements to result in temporarily elevated lead levels in drinking water and potential disproportionate impacts to customers who cannot afford to replace their portion of the service line.

While partial replacements can cause lead levels to temporarily increase, the EPA shares commenters' concerns about potentially disproportionate impacts to customers who cannot afford to replace their portion of the service line where water systems require customer cost sharing. The final rule does not prohibit all types of partial replacements because the EPA is concerned that an outright ban on partial service line replacement is infeasible. For example, water main replacement may require the removal of at least a portion of the LSL due to the alignment or spacing requirements to connect the new main to existing service lines (USEPA, 2020e; USEPA, 2023i), and maintaining water service is critical to public health as it provides water for drinking, cooking, and sanitation. The EPA recognizes there are situations following planned infrastructure work or emergency repair in which full service line replacement is not possible, such as when the water system is prohibited by law from replacing all or a portion of the service line without customer consent and the customer has not provided consent. While the final LCRI does not further limit the circumstances when partials may occur following emergency repair or planned infrastructure work (other than to exclude service line replacement projects from planned infrastructure work), the EPA has clarified in the final rule where a water system has access to conduct full service line replacement, the system must fully replace the service line. The EPA has also clarified in the final LCRI for protocols for planned partial service line replacement (*i.e.,* planned infrastructure work that impacts service lines) that where a system has access to conduct full service line replacement only if property owner consent is obtained, the water system must make a ''reasonable effort'' to obtain property owner consent. The EPA strongly encourages water systems to create plans, such as by developing standard operating procedures, for planned infrastructure work, emergency repair, and planning for contingency costs should lead service lines be discovered.

Instead of prohibiting the water system from conducting a partial replacement in planned infrastructure work or emergency repair, the final rule requires the water system to take risk mitigation measures to minimize the risk of lead exposure in drinking water to the persons served by the affected service line, including providing public education, a filter and replacement cartridges certified to reduce lead in drinking water, and an offer to take a follow-up tap sample after replacement. In addition to these mitigation measures, the final rule requirements for the service line inventory, replacement plan, and public education as well as the EPA-administered financial assistance for full LSLR are aimed at reducing the likelihood that water systems will need to conduct partial service line replacements as part of an emergency repair or in coordination with planned infrastructure work. A discussion of the requirements and support to facilitate systems gaining access to conduct full service line replacement is included in section IV.B.3 of this preamble.

The EPA notes that full service line replacement is also a goal of the DWSRF. While full LSLR is the desired outcome of all DWSRF assistance for LSLR, the logistics involved with coordinating LSLR with planned infrastructure projects may dictate that partial replacement of a service line is necessary if disturbance to the service line is unavoidable and the water system cannot gain access to conduct a full lead service line replacement (*e.g.,* a customer refuses to allow replacement of the customer-owned portion of the service line). For the purposes of oversight and confirming eligibility, State programs must require borrowers to document customer refusals, which could consist of any of the following: a refusal signed by the customer, documentation of a verbal statement refusing replacement, or documentation of no response after multiple attempts to reach the customer regarding full LSLR. State programs are required to report this information to the EPA (USEPA, 2024i).

A partial LSLR may only be funded by the DWSRF where the water system shows all of the following: that the partial LSLR is done in conjunction with planned infrastructure work, that disturbance to that service line is unavoidable because of the planned infrastructure work, and that the water system has documented customer refusal showing it cannot gain access to that property to conduct a full LSLR following multiple attempts (USEPA, 2024i).

Some commenters also recommended that the EPA not prohibit partial service line replacement under any circumstances and highlighted the effectiveness of public education and risk mitigation measures to reduce exposure following the elevated lead levels that can result from a partial replacement. The EPA does not agree that partial service line replacement should be permitted under all circumstances. The prohibition in the final rule ensures that water systems do not conduct any partial replacements that would occur outside of an emergency repair or coordination with planned infrastructure work that impacts service lines and that is not solely service line replacement. Partial replacement has not been shown to reliably reduce lead levels and is known to temporarily increase them. In some cases, increases in lead levels could extend over longer timeframes (Dore et. al, 2019). Although the final rule requires water systems to provide information and filters to consumers to reduce their risk to lead exposure where partial replacements are unavoidable, these requirements are short-term measures, and the EPA emphasizes the importance of its prohibition of partial replacements except in certain circumstances. The EPA considers avoiding the short-term increases in lead levels caused by partial replacements preferable to conducting risk mitigation measures to reduce lead levels after a partial replacement. Lead exposures continue to remain when partial replacements occur. In addition, risk mitigation measures such as filters or flushing protocols may not always be utilized by or correctly implemented by consumers. For example, existing flushing procedures that call for 30 minutes of flushing at every tap in the home, to be repeated every two weeks, (*i.e.,* AWWA, 2017) may be challenging to follow, time intensive, and expensive for some consumers.

Some commenters were concerned that the requirement for water systems to replace the remaining portion of a service line when a customer initiates replacement of their private side service line could worsen environmental justice impacts by allowing customers who can pay for their replacement to ''jump the line'' as opposed to those who cannot afford to conduct their own private-side replacement. While the EPA appreciates these environmental justice concerns, the increases in lead levels following a customer-initiated partial lead or GRR

service line replacement could pose an increased risk of adverse health effects, and this risk will be highest immediately following the replacement. Thus, replacing the system's portion of the affected service line and providing notification and risk mitigation measures as required is necessary to prevent adverse health effects to the extent feasible.

c. Final Rule Requirements

The final LCRI defines partial service line replacement as the replacement of any portion of a lead or GRR service line that leaves in service any length of lead or GRR service line upon completion of the work. The final rule prohibits water systems from conducting partial service line replacement, except when the replacement is conducted as part of an emergency repair or in coordination with planned infrastructure work that impacts service lines (excluding planned infrastructure work solely for the purposes of lead or GRR service line replacement). The final rule clarifies that where a water system has access to conduct full service line replacement the water system must fully replace the service line. Where a water system conducts a partial lead or GRR service line replacement, the system must install a dielectric coupling separating the remaining service line and the newly installed service line, unless the newly installed service line is made of plastic. Where a water system conducts partial service line replacement, the final rule requires the system to comply with the notification and risk mitigation requirements.

Where a partial replacement is to be conducted in coordination with planned infrastructure work that impacts service lines, the system must notify the property owner, or the owner's authorized agent, as well as non-owner occupant(s) served by the affected service line at least 45 days prior to the replacement and offer the opportunity to fully replace the service line. Before the affected service line is returned to service, the water system must provide the consumer with the following: written notification that explains that the consumer may experience a temporary increase of lead levels in their drinking water due to the replacement; contact information for the water system; written information about a procedure for the consumer to flush service lines and premise plumbing of particulate lead following the partial replacement; and a pitcher filter or point-of-use device that is certified by an American National Standards Institute (ANSI) accredited certifier to reduce lead along with six months' worth of replacement cartridges. The final rule clarifies that where a water system has access to conduct full service line replacement only if property owner consent is obtained, the water system must make a ''reasonable effort'' to obtain property owner consent to replace the remaining portion of the service line. The reasonable effort must be completed before the partial lead service line replacement.

Where partial service line replacement is conducted due to an emergency repair, systems must provide the same notification and risk mitigation measures to consumers as when conducting a planned partial replacement before the line is returned to service; however, the system must offer to replace the remaining portion of the service line created by the emergency repair within 45 days.

Where the customer intends to replace their portion of a lead or GRR service line, the final rule requires that water systems replace their remaining portion of the service line at the same time as, or as soon as practicable after, but no later than 45 days from the date the customer conducted their partial replacement and provide notification and risk mitigation measures. The water system must notify the State within 30 days to complete the replacement no later than 180 days from the date the customer conducted their partial replacement. Where the water system is notified or otherwise learns that a customer-initiated replacement occurred within the previous six months, the system must replace any remaining portion of the service line within 45 days from the day of becoming aware of the customer-initiated replacement as well as provide notification and risk mitigation measures within 24 hours of becoming aware of the customer-initiated replacement. Where the water system is notified or otherwise learns of a customer-initiated replacement that occurred more than six months in the past, the LCRI does not require the system to replace the remaining portion of the service line within a certain number of days. Instead, the remaining portion of the lead or GRR service line must be identified in the system's inventory and replaced as part of mandatory service line replacement. For any replacement prompted by a customer-initiated replacement, the final rule requires notification and risk mitigation measures be provided to the persons served by the affected service line.

In the final LCRI, partial service line replacement does not count towards mandatory full service line replacement. On an annual basis, water systems must report to the State the number of partial lead and GRR service line replacements that have been conducted in the preceding program year and the address associated with each partial replacement (§ 141.90(e)(8)(iii)). Water systems must also annually update that number in their inventories. Public education to notify customers of their service line material must continue annually until the entire lead or GRR service line is replaced. Within six months of any change in ownership of the property, the system must first reach out to the new owner with an offer to replace the remaining lead or GRR portion of the service line. Systems may use new service initiation or service transfer to a new customer to identify when there is a change in ownership. Within one year of any change in ownership of the property, the system must make a reasonable effort to obtain the property owner's consent to conduct full service line replacement. If the new property owner declines the replacement, the water system must continue to provide annual notification of their service line material until the entire lead or GRR service line is replaced.

The final rule requires the provision of filters following partial service line replacement to mitigate potential increases in lead release to drinking water. These requirements are intended to further protect public health in the event of increased lead release following a disruption of the scale caused by these events.

6. Time Frame for Full Service Line Replacement

a. Rationale and Proposed LCRI Revisions

Under the LCR, systems must conduct LSLR after the system exceeds the lead action level at a rate of seven percent per year, corresponding to a 15-year deadline to replace all LSLs. However, the rule allowed systems to use partial LSLR and sampling (''test-outs'') for individual service lines to count toward the replacement rate. Under the 2021 LCRR, systems must replace the entire service line at a rate of three percent per year if they exceed the lead action level, corresponding to an approximately 33-year deadline to replace all lead and GRR service lines. The 2021 LCRR does not allow partial replacement and ''test-outs'' to count towards the replacement rate.

For the proposed LCRI, the EPA proposed a 10-year deadline for water systems to replace all lead and GRR service lines under their control. In

recognition of the wide variation among systems with respect to the number and proportion of lead and GRR service lines in their distribution systems, the proposed LCRI included two provisions to adjust the time frame for LSLR. To ensure that the rule meets the statutory standard for a treatment technique rule to ''prevent known or anticipated adverse effects on the health of persons to the extent feasible,'' the EPA proposed to retain the requirement that the State establish a shortened deadline if the State determines it is feasible for a water system (*e.g.,* by considering the number of lead and GRR service lines in a system's inventory) (see section IV.B.7 of this preamble). To ensure that the rule's service line replacement deadline is not infeasible for systems with a large number or proportion of lead and GRR service lines, the EPA proposed provisions for systems to apply for a deferred deadline (see section IV.B.8 of this preamble).

For the proposed LCRI, the EPA utilized new evidence available after the promulgation of the 2021 LCRR to determine the feasibility of conducting full service line replacement by a set deadline. During the development of the 2021 LCRR, there was a lack of data regarding the number of lead and GRR service lines in systems as well as very few broad service line replacement mandates in large geographic regions, or State laws requiring such. The EPA was only aware of a limited number of systems that had or were proactively conducting service line replacement. For the proposed LCRI, however, new and higher quality evidence and data were available to more accurately assess the feasibility of requiring full service line replacement by a set deadline. Many systems have documented the voluntary completion of both service line inventories and full service line replacement programs (USEPA, 2023a; USEPA, 2023k). In addition, four State (Illinois, Michigan, New Jersey, and Rhode Island) service line replacement laws suggest that States expect broad, mandatory service line replacement by a set deadline to be ''technically possible'' given the thousands of systems required to conduct service line replacement simultaneously within and across these States. Specifically, Michigan requires replacement of all lead and galvanized previously downstream of LSLs starting in 2021, to be completed by 2041. Illinois requires replacement of all LSLs starting in 2027, with the timeline determined by the number of lead and galvanized lines (if the galvanized lines are downstream of lead). Both New Jersey and Rhode Island require all LSLs and galvanized service lines (irrespective of whether there is or was an upstream LSL) to be replaced in 10 years unless the system is granted an extension by the State (State of New Jersey, 2021a; State of Rhode Island, 2023a). Michigan and New Jersey have several years of experience implementing their service line replacement laws that were promulgated in 2021, demonstrating the feasibility of the States' replacement requirements. The EPA notes that these four States have approximately one-fifth of the lead content service lines in the country (1.9 lead content lines out of 9.0 million estimated lead content lines) and have among the most LSLs in the country (USEPA, 2023l; USEPA, 2024n). Finally, BIL and other funding has become available after the 2021 LCRR promulgation to support lead and GRR service line replacement projects, which in turn further supports the feasibility of setting a 10-year replacement deadline because this requirement is a primary driver of the proposed rule costs.

For the LCRI proposal, the EPA's feasibility analysis used data from official sources documenting service line replacement rates that had been achieved in systems nationwide. The EPA used data from 30 systems serving more than 50,000 persons that had maintained proactive LSLR programs to ensure the resulting rate reflected the technically possible rate of replacement that may reasonably be afforded by a large system; in doing so, EPA used the definition of ''large system'' that has historically been used in the LCR, such as for CCT requirements. The EPA then normalized the systems' replacement rates by the estimated number of households served by each water system. The EPA calculated the 95th percentile of the annual replacements per households served to set as the national threshold reflecting the fastest feasible annual replacements per household served that systems could achieve under a 10-year deadline, which equaled 0.039 annual replacements per household served. The EPA used the 95th percentile rather than the maximum rate achieved by any one of the 30 systems to avoid setting the per-household rate based on the rate achieved by an individual system as that may not accurately reflect the conditions at a wide variety of systems subject to the replacement requirements in the rule. The analysis also used the results of the 7th Drinking Water Infrastructure Needs Survey and Assessment (referred to as ''Needs Survey''), which was conducted in 2021. The data was published and used in the feasibility analysis in 2023 (USEPA, 2023l), providing better estimates on the number of lead, GRR, and unknown service lines in individual systems and nationwide than were available during the development of the 2021 LCRR. The EPA used data from the Needs Survey to estimate the number of systems that would exceed the 0.039 annual replacements per household served threshold and determined that mandatory service line replacement in 10 years or less is technically possible and affordable for 96 to 99 percent of all systems (USEPA, 2023k).

b. Summary of Public Comments and the EPA's Response

Several commenters suggested that the 10-year deadline is not practical or feasible. Some comments simply asserted, without explanation, that a 10-year deadline was not feasible. Other commenters stated that the EPA had not adequately demonstrated feasibility, that the 10-year deadline was not feasible without the availability of substantial additional funding, and that the systems used in the feasibility analysis were not appropriate for determining replacement feasibility for typical systems under the LCRI. The EPA disagrees that feasibility of a 10-year replacement deadline was not adequately demonstrated. In the feasibility analysis for the proposed rule, as in the updated analysis for the final rule, the EPA examined annual replacement rate data from water systems that are conducting or have finished conducting service line replacement. Due to the complexity of service line replacement and the numerous variables that affect replacement rates, many of which are specific to each water system or even each site within a water system, modeling or projecting future service line replacement rates is highly uncertain. Thus, basing the feasibility analysis on available data from replacement programs that have already been conducted by real world systems provides the soundest basis for evaluating the technical possibility and affordability of mandatory service line replacement requirements and for establishing a deadline in a national rule covering a wide variety of systems (also see preamble sections IV.B.7 and IV.B.8 for shortened and deferred deadlines).

The EPA considered comments on data for use in the agency's analysis, such as whether the EPA should include replacement rate data from systems with ''exceptional'' circumstances, systems serving 50,000 persons or fewer, and

four water systems that provided data in their public comments. Details on each aspect of the feasibility analysis are provided in subsequent paragraphs. In summary, the final LCRI's updated feasibility analysis excluded replacement rate data from Newark, NJ, and included replacement rate data from systems serving populations greater than 10,000 persons and from three of the four systems that provided replacement rate data.[11] In total, the dataset used for the final rule's service line replacement feasibility analysis included replacement rates from 44 water systems. The 95th percentile of these data is 39 annual replacements per 1,000 service connections (see section IV.B.8 of this preamble for an explanation on the use of service connections instead of households served). This information demonstrates that, based upon the best available service line replacement data, it is technically possible and affordable for water systems to replace lead and GRR service lines at a rate of 39 annual replacements per 1,000 service connections (USEPA, 2024d).

Some commenters suggested that the EPA should not use systems with ''exceptional'' circumstances, such as Flint, MI, and Newark, NJ, in its analysis because they claimed that the average system would not be able to complete service line replacement as quickly as these systems. These commenters asserted that these water systems were exceptional because they had significant external financial subsidies, were in the midst of much larger lead in drinking water crises, and had taken steps to initiate their replacement programs prior to the construction period referenced in the EPA's analysis. These commenters also pointed out that inclusion of these ''exceptional'' systems in the dataset influence the per-household threshold, even when using the 95th percentile, and that they should be excluded from the dataset entirely to avoid any influence on the per-household rate threshold.

The EPA acknowledged in its feasibility analysis for the proposed LCRI that two systems (Flint, MI, and Newark, NJ) received substantial external funding. For the proposed LCRI, the EPA selected the 95th percentile of the per-household rate to set the fastest feasible rate while avoiding setting the rate at the maximum recorded annual replacements per household rate of a single system. For the final LCRI, the EPA considered the replacement rate data for both Flint, MI, and Newark, NJ, separately as described below.

With respect to Newark, NJ, the EPA became aware after publication of the proposed rule of an ongoing formal investigation by the City of Newark and the NJ Department of Environmental Protection (DEP) into whether a contractor for the Newark LSLR program conducted partial service line replacements instead of full replacements in some homes (City of Newark, 2024). The formal audit is seeking to determine the number of partial replacements that may have taken place (City of Newark, 2024). The uncertainties associated with ongoing audit of the Newark LSLR data could potentially affect the rate at which full service line replacement was conducted because a partial service line replacement could be completed more quickly than a full replacement. As of August 2024, the results of the audit are not yet available. Because of the new uncertainty this investigation raises with respect to the Newark data and the importance of moving expeditiously to promulgate the final LCRI, the EPA has excluded the replacement rate data from Newark, NJ, from the quantitative analysis for determining the feasibility threshold rate for service line replacement. Nevertheless, Newark's LSLR program provides qualitative evidence in support of finding that it is technically possible to conduct a full service line replacement program across a large metropolitan or regional PWS in a short period of time. For example, Newark employed 20 service line replacement crews simultaneously during their program to replace more than 20,000 lead and GRR service lines in less than three years (City of Newark, 2020).

With respect to Flint, MI, the EPA disagrees with commenters that the City's replacement rate data should be excluded from the dataset used to calculate the feasible rate threshold. Flint received financial and technical assistance for its replacement program as well as substantial press coverage; however, the EPA does not agree that this support and media coverage warrant exclusion from the feasibility analysis. The replacement rate data in Flint represents the annual replacements per 1,000 service connections averaged over the period from 2016 to 2022, when the City of Flint reported having replaced 97 percent of its service lines requiring replacement (City of Flint, n.d.). Thus, while nearly 8,000 of the approximately 10,000 replacements conducted in Flint were completed over a 2-year period between March 2016 and April 2018 (City of Flint, 2019), the EPA uses an average rate across six years in its feasibility analysis. Thus, the EPA's analysis uses an average annual rate that does not rely solely upon the initial replacement rates at the height of the lead crisis. In addition, while Flint received financial subsidies for service line replacement, data from the U.S. Census Bureau shows that Flint had a high poverty rate in 2015, measured at 41 percent (U.S. Census Bureau, 2015a). This is significantly higher than the 2015 national average poverty rate of 13.5 percent (U.S. Census Bureau, 2015b). Thus, other cities will have fewer economic challenges than Flint and may be less reliant on external funding to support service line replacement.

One commenter suggested that the proposed replacement rate and timeline are not feasible for large systems, particularly when ''large'' systems are defined as systems that serve more than 10,000 persons rather than those that serve more than 50,000 persons. The commenter noted that a system size of less than 10,000 persons served is used to assess ''small system impacts under SBREFA and is also the breakpoint used in SDWA for small systems''. In light of this comment, the EPA reconsidered its decision to assess feasibility based only on the 30 systems serving more than 50,000 persons in the proposed rule. In the final rule, the agency included an additional 12 systems (serving between 10,000 and 50,000 persons) in the analysis. Of these 12 systems, 10 are within metropolitan statistical areas as defined by the Office of Management and Budget (OMB) for statistical use (OMB, 2021), supporting that these systems may represent large metropolitan or regional PWSs. In addition, including such systems increased the sample size of the EPA's dataset, which can improve the assessment of feasibility of mandatory full service line replacement for a wider variety of systems. The EPA also agrees with the commenters noting that a cut off of 10,000 persons served aligns with the SDWA breakpoint for small systems and the small system impact analysis under SBREFA.

The EPA did not include replacement rate data identified from two systems serving 10,000 persons or fewer in the feasibility analysis for the final rule. In assessing the affordability aspect of feasibility for purposes of an NPDWR, the EPA evaluates costs to large

[11] Replacement rate data for one system was provided by a State, which did not include the name or any identifying information for the system. Therefore, the annual replacements per service connection or per household served could not be calculated, and data from this system was not included in the feasibility analysis (USEPA, 2024d).

metropolitan or regional PWSs, not small PWSs. Additionally, both small systems had substantially higher annual replacements per 1,000 service connections. Small systems having higher replacement rates is not unexpected in this scenario due to smaller systems having fewer service lines overall and, therefore, fewer lines to replace compared to larger systems. Individual service line replacement has generally similar cost and time needed regardless of system size. Despite potential resource limitations small systems may face, fewer lead and GRR service lines require less time and fewer resources, making 100 percent replacement relatively easier to complete for small systems than for large systems with similar percentages of lead and GRR service lines in their inventory. Additionally, service line replacement contrasts to centralized treatment operations, where the same treatment unit is employed at the treatment plant for different system sizes, and, therefore, systems can take advantage of the economy of scale present in installing and maintaining these treatments.

For the final LCRI, the EPA retained from the proposal the use of the 95th percentile to set the fastest feasible annual replacements per 1,000 service connections that water systems nationwide can achieve within 10 years. The EPA did not select the maximum number of annual replacements per 1,000 connections in the dataset to represent the fastest feasible rate because the agency did not intend for any single system with potentially unique circumstances to determine the rate for a broad range of systems covered by a national rule.

Commenters suggested that the EPA evaluate the feasibility of alternative deadlines to 10 years. Some commenters suggested a shorter deadline, such as five years or eight years, to ensure that no system that could meet an earlier deadline would fail to do so. Other commenters suggested longer deadlines (such as 15 years), suggesting that 10 years is not feasible. After consideration of all the comments and the available data, the EPA determined that 10 years is at feasible deadline for most systems (USEPA, 2024d). Under the statute, the final LCRI must meet the standard of preventing lead health effects ''to the extent feasible,'' which means that the service line replacement rate must be both feasible and the fastest feasible. If a shorter national deadline was set, such as five years, this would compromise implementation of the rule since a larger number of systems would be eligible for a deferred deadline under the final rule criterion or seek exemptions or variances. Setting a shorter deadline nationwide in the rule could also impact States and some water systems' ability to effectively comply with other aspects of the rule to support and manage an effective replacement program, including the inventory development and validation and maintenance of an updated service line replacement plan. In addition, a more compressed schedule for all systems nationwide could more significantly impact supply chains for materials as well as impact worker availability, which some commenters raised as areas of concern. All of these factors indicate that a national deadline shorter than 10 years could be infeasible for many water systems across the United States. The EPA maintains that for some individual water systems, such as those with a small proportion or total number of lead and GRR service lines, a rate faster than 10 years could still be feasible.

Furthermore, using the 10-year replacement deadline helps streamline the rule and facilitate implementation, a priority identified in the 2021 LCRR review. The 10-year deadline represents the EPA's best approximation of the fastest feasible service line replacement rate for most systems, and therefore, it is the default deadline. In recognition of the strong possibility that depending on the specific circumstances, which may evolve over time, many systems will be able to replace all their lead and GRR service lines even faster than their replacement deadline (*i.e.,* 10 years, deferred deadline), the LCRI requires States to set shortened deadlines where it is feasible. For example, for systems with a small proportion of lead and GRR service lines, it may be feasible to complete replacement within a much shorter period than 10 years and at a more rapid rate than 10 percent of lines per year. In addition, it may be less efficient to conduct replacement over a 10-year period than a shorter timeline. For example, Central Arkansas Water, which serves approximately 205,000 service connections, identified and replaced all 115 remaining LSLs in 14 months. A 10-year replacement program for this system would lead to approximately 12 service line replacements per year, which is less efficient and could lead to an increased need of resources considering replacement crews would be needed over a much longer period of time (Sweeney, 2020; Central Arkansas Water, 2022).

In addition to failure to meet the ''feasibility'' requirements in the statute, a shorter mandatory replacement deadline in the final LCRI would likely result in a greater number of water systems seeking exemptions from the treatment technique requirements. Systems may seek an exemption from the LCRI's treatment technique to obtain additional time to complete their service line replacement programs in accordance with requirements under §§ 142.50 through 142.57. To obtain an exemption, systems must expend resources demonstrating eligibility for the exemption. States and the EPA would need to expend resources to evaluate the exemption request, hold public hearings, and consider the public input prior to approving or denying an exemption providing a later compliance date. The EPA thinks that system, State, and EPA resources are better expended on inventorying and replacing lead and GRR service lines than evaluating exemptions. The EPA's decision to establish a 10-year replacement deadline with limited criteria for extensions will also reduce the resources spent issuing exemptions for the requirements.

Commenters recommended that instead of a national deadline established in the LCRI, the replacement rate for each State or system be determined at the State or local level on a case-by-case basis, as these entities would have a better understanding of system specific challenges or advantages that would allow them to determine the fastest feasible rate. While no single deadline in a national-level regulation can represent the fastest feasible deadline for each of the nearly 66,000 individual systems nationwide that are required to comply with the LCRI, the EPA disagrees that replacement rates should be solely determined at the State or local level. States or local levels of government determining deadlines would make implementation more challenging, place significant burden on States to determine either State- or system-specific deadlines, and complicate State oversight with a resulting hodge-podge of deadlines. The LCRI's approach of a 10-year deadline that may be adjusted up or down is essentially a hybrid approach of single deadline and a case-by-case determination that best meets SDWA standards for a NPDWR, while giving due consideration to the variability among systems, and is more streamlined and implementable than a case-by-case determination. While States may be in a better position to determine an individual system's unique characteristics and challenges, it is beyond their resource capacity to make this determination on a case-by-case basis for each system and unnecessary

in light of the EPA's feasibility analysis using actual data.

Some commenters recommended use of a binning system in the LCRI, similar to that employed in the Illinois LSLR requirements (which assigns systems to one of six default replacement deadlines based on the number of LSLs in a system), rather than a fixed rate and three-year rolling average. In the 1991 LCR, the EPA acknowledged that ''it is difficult to determine a uniform, national replacement schedule applicable to all public water systems because the circumstances faced by systems can vary substantially, depending upon the number of lead lines in a system and system size'' and that large systems with few lines could replace lines on the fastest schedule, while systems with high percentages of LSLs would take the longest to complete replacement (56 FR 26508, USEPA, 1991). For the 1991 LCR, the EPA had considered alternate ways to structure the LSLR rate to take into account system size and the number of LSLs in the system. The EPA found that such an approach, while accounting for various factors affecting feasibility for individual systems, can yield ''inappropriate results'' in some cases, requiring systems to complete replacement on an ''inordinately fast'' schedule that would not be feasible (56 FR 26460, USEPA, 1991). The 1991 LCR proposal gives the example where the number of replacements required per year corresponds to a fixed percentage (*e.g.,* 10 percent) of the total number of service lines in the system. Under a construct where a system must replace 10 percent of all its service lines, a large system with 200,000 non-LSLs and 50,000 LSLs would need to replace all their LSLs in just 2.5 years (*i.e.,* replacing 20,000 LSLs per year at an annual rate of 40 percent) and there are no data to support that such a rate is feasible. The EPA also considered using a binning approach but determined it could create implementation challenges and add complexity to the rule, which runs counter to the priority identified in the 2021 LCRR review to simplify the rule. The final LCRI provides a single replacement rate but with some flexibility to shorten or lengthen schedules in individual cases; this is much simpler than a multiple bin scheme. Because a binning approach would add significant and unnecessary complexity to the rule and the LCRI already provides flexibility to alter the deadline in appropriate cases, the EPA has determined that the approach in the final rule, with a national 10-year deadline, and deferred deadline criteria for a limited number eligible systems, and with the requirement for the State to set a faster rate where feasible, is a simpler and more implementable approach to assure LSLs are replaced at the fastest feasible rate.

i. Additional Discussion of Affordability

Some commenters stated that, because there exists substantial evidence of water systems conducting service line replacement, the technology itself is clearly affordable. The EPA agrees with commenters that service line replacement is an affordable technology, and the technology has been required by the rule since the 1991 LCR, albeit at differing scales. As noted previously, service line replacement is unlike centralized treatment in that the total cost is dependent upon the number of service lines replaced rather than the cost of the treatment itself. The cost per customer, if costs of replacement are spread to all rate-paying customers, is also dependent on the proportion of lead and GRR service lines to total service lines in the distribution system. Thus, based on the fastest feasible rate established by already completed service line replacements, 10-year service line replacement was demonstrated to be technically possible and reasonably afforded for approximately 98 percent of systems (see section IV.B.8 of this preamble for a discussion on deferred deadlines).

Some commenters suggested that replacement of all LSLs in 10 years would not be affordable for water systems because they would have to rely on the ability of their local communities to pay for replacements, that more State or Federal funding will be needed, or that the EPA had not adequately demonstrated affordability in the Economic Analysis of the proposed rule. The EPA disagrees that the 10-year deadline is not affordable and that the agency has not demonstrated its affordability. The final rule feasibility analysis for service line replacement examines replacement rates achieved by systems and concludes that the rates achieved in this analysis are the highest rates for which currently available data can demonstrate to have been reasonably afforded water by systems (USEPA, 2024d). As noted above, the analysis demonstrates that, based upon the best available service line replacement data, it is technically possible and affordable for water systems to replace lead and GRR service lines at a rate of 39 annual replacements per 1,000 service connections. While some of the identified systems received varying amounts of financial assistance to support service line replacement, the EPA did not consider the availability of external funding in its calculation of household costs in the economic analysis. Costs of the service line replacement requirement were calculated over the entire 35-year period of analysis and per-household costs of implementation of the entire rule (not limited to LSLR) were estimated based on system size, water source, and ownership (see Exhibit 6 in section VI of this preamble for annualized service line replacement cost and Exhibits 7 and 8 for total rule cost per household). Implementation costs to systems and States were also considered in the affirmation of the cost-benefit determination (see Exhibit 10 of this preamble for total annualized rule cost including PWS and State implementation and section VI.F.3 of this preamble (Reaffirm Cost-Benefit Determination)). The EPA notes that there is significant funding available to support service line replacement, and the EPA expects that the additional funding from BIL will increase the affordability of the achieved replacement rates (see section III.G of this preamble for further discussion on funding).

c. Final Rule Requirements

The final rule establishes a 10-year deadline for water systems to replace all lead and GRR service lines under their control. In recognition of the wide variation among systems with respect to the number and proportion of lead and GRR service lines in their distribution systems, the final LCRI also includes provisions for systems to apply for a deferred deadline (see section IV.B.8 of this preamble) and provisions for States to require systems to replace all lead or GRR lines under a shortened deadline (see section IV.B.7 of this preamble).

7. Mandatory Service Line Replacement Rate

a. Rationale and Proposed LCRI Revisions

The 1991 LCR requirement to replace (or ''test out'' individual service lines) at a rate of seven percent per year is calculated on an annual basis (§§ 141.84(b)(1) and 141.90(e)(1) through (3)). The 2021 LCRR replacement requirements of three percent per year following a lead action level exceedance and at a ''goal-based rate'' determined by the State following a lead trigger level exceedance must be calculated using a two-year rolling average.

For the LCRI, the EPA proposed a minimum average annual replacement rate of 10 percent for most systems,

calculated as a 3-year rolling average. Water systems would be required to average the annual percentages of service lines replaced in the preceding three years of the replacement program, beginning at the end of the third ''program year'' and annually thereafter. The EPA proposed for a ''program year'' to be measured from the LCRI compliance date. The agency proposed a rolling average across a three-year period to account for stakeholder concerns about the potential annual variability and temporary disruptions or shortages that impede a system's ability to replace service lines, such as supply chain delays, workforce limitations, natural disasters or extreme weather, and difficulties gaining access for full service line replacement. The EPA anticipated that this approach would provide water systems with flexibility during the initial years of their replacement programs to create and manage their programs, adjust and plan for market corrections in labor and supplies, apply for and obtain funding, and obtain advice on applicable laws, regulations, or water tariff agreements associated with the replacement of lead and GRR service lines. The EPA sought comment on how to calculate compliance with a service line replacement deadline and the average annual rolling rate construct, including the complexity of the construct.

The EPA proposed in the LCRI to require water systems to calculate the percent of service lines replaced for each year using the replacement pool and the annual number of service lines replaced. The proposed LCRI included requirements for water systems to calculate the baseline replacement pool by adding the total number of lead, GRR, and unknown service lines in the baseline inventory submitted by the compliance date. To calculate the number of lead and GRR service lines a system would need to replace in a given program year, the EPA proposed to require systems to divide the most up-to-date replacement pool by the total number of years allowed to complete mandatory service line replacement (*e.g.,* 10 years). At the beginning of each replacement program year, water systems must update the replacement pool to account for inventory updates and recalculate the annual number of service line replacements needed to meet the replacement rate. The EPA proposed to require that water systems update their replacement pools by: (1) Subtracting unknown service lines that are identified as non-lead from the replacement pool and (2) adding any non-lead lines found to be lead or GRR service lines. As proposed, unknown service lines identified to be lead or GRR service lines are recategorized in the replacement pool, but they do not change the number of lines because they have already been counted in the number of lines for determining the replacement pool.

The EPA proposed to not limit the replacement rate to service lines solely under the control of the system. The proposed rule did not permit water systems to subtract lead and GRR service lines that are not under the control of the system from the replacement pool nor count them towards the annual number of service lines replaced. All water systems are subject to mandatory service line replacement and must replace all lead and GRR service lines; however, systems are not required by this rule to replace lead and GRR service lines that are not under the control of the system. As discussed in section IV.B.3 of this preamble, control is not static, and service lines can come under the control of the system at any time as circumstances change. Counting lead and GRR service lines that are not under the control of the system as ''replaced'' provides water systems would not be appropriate as they could become under the control of the water systems as well as this would disincentivize systems from actively seeking opportunities to replacing these lines in the future such as outreach with community members, which does not protect public health to the extent feasible. The replacement pool provides the water system with a full account of the historic and current lead and GRR service lines in the system, regardless of the system's access or lack thereof at one point in time, starting at the LCRI compliance date. Removing these lines from the replacement pool does not remove their risk to consumers.

The proposed LCRI also included requirements on what full lead and GRR service line replacements must count towards the number of service lines replaced and the average annual replacement rate. Full service line replacements would count towards the replacement rate in the following instances: (1) where the replacement results in the entire service line to be categorized as non-lead in the inventory, (2) where a non-lead service lines is installed for use and the lead or GRR service line is disconnected from the water main or other service line, and (3) where the system physically disconnects a service line that is not in use and does not install a new non-lead line because there is no service line in use (the system must not reconnect the line to resume service). Service line replacements would not count towards the replacement rate in the following instances: (1) Where the service line is partially replaced, (2) where a lead, GRR, or unknown service line is determined to be non-lead, (3) where only a lead connector is replaced, and (4) where pipe lining or coating technologies are used while the lead or GRR service line remains in use. The EPA proposed for unknown service lines identified as non-lead to not count towards the number of service lines replaced because such a requirement could inadvertently incentivize water systems to delay the identification of the material of unknown service lines so water systems could claim ''replacement'' credit for when lead or GRR service lines have not been replaced, thereby delaying the public health benefits of replacement to consumers served by a lead or GRR service line.

b. Summary of Public Comments and the EPA's Response

Some commenters stated that the proposed three-year rolling average is complex and may be difficult to implement. Other commenters supported the proposed approach, with one commenter noting that the LCRI is inherently complex, and the EPA struck a reasonable balance. Some commenters stated that using a cumulative average approach to track compliance with LSLR would provide more flexibility for water systems than a three-year rolling average and accounts for the potential that replacements become more challenging towards the end of program when customers are harder to reach or because the replacements are conducted individually as opposed to in coordination with infrastructure work where replacement may be more efficient.

The EPA agrees with commenters that a cumulative average is simpler to understand and calculate than a three-year rolling average. Simplifying the rule to ease implementation was identified in the 2021 LCRR review as a priority for the final rule. Rather than calculating an average within a rolling three-year window, a water system calculates the average rate of replacement from the beginning of the program. For example, for a water system with a 10-year mandatory replacement deadline, at the end of the fourth program year, the system must have replaced at least 40 percent of the lines in the replacement pool. With a three-year rolling average, the system averages the replacement rate in program years two, three, and four,

whereas with a cumulative average, all replacements conducted since the compliance date are included in the calculation (*i.e.,* average of rates summed for years one, two, three, and four). A cumulative average has the additional benefit of providing more flexibility for water systems that may experience challenges that temporarily disrupt replacement progress. For example, for a water system that is on track to complete replacement by the program deadline under a rolling three-year average, it would be possible to be in violation if they replaced fewer than 10 percent of the replacement pool over a few consecutive years because only three years of the replacement program are considered in the calculation. Especially toward the end of the service line replacement program, remaining property owners with lead or GRR service lines may be harder to reach, and the remaining replacements may need to be conducted individually instead of conducted more efficiently in coordination with other replacements or infrastructure work. A cumulative average will assure that systems that were ahead of their replacement schedule initially would not necessarily be in violation if their replacement rate slows as a result of these difficulties. The final rule includes a requirement for systems to meet a cumulative average rather than a three-year rolling average.

The EPA emphasizes that systems should not slow their replacement rate simply because they have ''banked on'' service line replacements in earlier years of the program. However, the EPA does not anticipate this practice occurring because of the many requirements and incentives that the final rule contains to ensure water systems are replacing lead and GRR service lines as quickly as feasible. For example, the final rule provides a pathway for water systems to defer CCT steps and avoid a more burdensome OCCT study if they replace all remaining lead and GRR service lines in five years or less (see section IV.F.2.d of this preamble). Additionally, replacement of these significant lead sources is likely to reduce the systems 90th percentile lead levels, thereby reducing the likelihood of a lead action level exceedance and associated required actions (*e.g.,* OCCT, systemwide public education, Tier 1 PN). States also must set a faster rate where feasible, which would also apply if the system intentionally slowed their replacement rate. Additionally, the final LCRI retains from proposal the inclusion of unknown service lines in the replacement pool, which incentivizes more rapid identification of unknown lines.

The EPA received mixed comments about whether to require water systems to meet the minimum service line replacement rate in each of the first three program years following the compliance date. Some commenters said that waiting until the third program year to assess compliance with the replacement rate could allow water systems to more effectively scale up their replacement program by engaging in planning and bidding on contractors and to identifying unknowns, whereas other commenters said that requiring earlier demonstration of compliance would allow States to enforce sooner and noted that systems already have the three years prior to the compliance date to become prepared for the replacement requirement.

The EPA agrees that requiring calculation and reporting of compliance with service line replacement three years after the compliance date provides water systems with additional time beyond the three-year period between promulgation and the compliance date for the rule before assessment with the cumulative average replacement rate is measured. While the EPA anticipates that water systems will use the three years prior to the compliance date to prepare for mandatory replacement, water systems will continue to build capacity for their service line replacement programs, identify service line materials, and initiate mandatory full service line replacement that is required during the first few years of the program starting upon the compliance date. By requiring the cumulative average replacement rate to be calculated starting at the end of the third program year, water systems are provided with additional flexibility to scale up their program and provide more time to enact policies to facilitate full service line replacement. Under a cumulative rate measured at the end of year three, water systems will be required to have replaced an average of 10 percent of the replacement pool per year, or 30 percent by the end of year three. This is the equivalent number of replacements that water systems would have been required to complete by the end of year three if the rate was measured annually, but this approach provides more flexibility for fluctuations in the annual percent replaced, especially during the first few years after the compliance date. Additionally, this requirement could also facilitate service line replacement prioritization as well as facilitate efficiencies in service line replacement. Therefore, the EPA is requiring that the cumulative average replacement rate be calculated starting at the end of the third program year. The EPA adds the text ''water systems must start mandatory service line replacement programs no later than the compliance date specified in § 141.80(a)(3)'' to § 141.84(d)(4)(i) to clarify that water systems must comply with service line replacement on the LCRI compliance date and not by three years following the LCRI compliance date. Rather, water systems are required to meet the cumulative average replacement rate of 10 percent, first assessed at the end of three program years following the compliance date and annually thereafter.

Several commenters expressed concerns over the inclusion of unknown service lines in the replacement pool. Commenters stated that the proposed approach could result in non-compliance where many unknown service lines remain that are, in fact, non-lead (*e.g.,* the system runs out of known lead or GRR service lines to replace because its inventory contains only unknown lines, and, thus, cannot complete the required number of replacements). The EPA disagrees with commenters that unknown service lines should be excluded from the calculation of the number of required annual replacements for multiple reasons. First, the identification of unknown service lines in a timely manner is important for public health and transparency, and including unknown lines in the replacement rate incentivizes their identification as quickly as feasible. By identifying unknown lines early in the replacement program, systems can avoid the situation where they run out of lead and GRR service lines to replace, leading to non-compliance. Second, a requirement to exclude unknown service lines from their replacement pool could itself lead to a situation where the system is not in compliance. For example, if a system determines that many of their unknown lines are lead or GRR service lines later in the replacement program, those systems could be in jeopardy of non-compliance with their service line replacement deadline because they had not set an appropriate replacement rate in the initial years of the program and may not be able to complete the replacement of the remaining lead and GRR service lines by the deadline. Third, systems have had ample notice to start identifying the material of unknown service lines. The 2021 LCRR requires initial inventories to be submitted by October 16, 2024, and systems will have

another three years following promulgation of the LCRI to complete their LCRI baseline inventory. Furthermore, existing State regulations already require completion of service line inventories (*i.e.,* identification of all unknown lines) on shorter timelines. Rhode Island finalized an inventory and replacement law in 2023, which requires initial inventories in 2024 and a completed inventory in 2026 and Illinois signed their law in 2021, which required initial inventories in 2022 and final inventories by 2024 (USEPA 2023a, Section D.1; Illinois General Assemble, 2021; State of Rhode Island, 2023a). Illinois's experience is instructive. Its law prompted most systems to complete service line inventory and identify unknown service lines prior to the compliance date, and the median system had no unknown service lines remaining as of 2022 (USEPA, 2024d). Fourth, the EPA provided guidance and support materials for identifying service line materials and continues to provide guidance and technical assistance to facilitate water system progress in identifying unknown lines. In 2022, the agency developed Guidance for Developing and Maintaining a Service Line Inventory (USEPA, 2022c), inventory templates (*https://www.epa.gov/ground-water-and-drinking-water/revised-lead-and-copper-rule*), and fact sheets (USEPA, 2023o), and in 2023, provided the small entity compliance guide for developing service line inventories (USEPA, 2023n). Additionally, the EPA's Get the Lead Out (GLO) Initiative provides technical assistance to communities to accelerate LSLR, including inventory development. Finally, funding from BIL and other sources is available for systems to identify and replace service lines (see section III.G of this preamble). For all these reasons, water systems that do not want to include unknown service lines in their replacement rate calculation have sufficient opportunity to remedy that by identifying unknown service lines prior to the LCRI compliance date to avoid non-compliance with service line replacement requirements due to high numbers of unknown service lines.

The EPA received comments about specific situations that commenters believed would merit recalculating the replacement rate. For example, some commenters suggested that the water system should get credit for a service line replacement when a line previously characterized as a lead or GRR service line is determined to be non-lead. The EPA disagrees that systems should be allowed to count identification of lead and GRR service lines as non-lead as a service line replacement. While the EPA appreciates the effort required to identify a non-lead line previously thought to require replacement, allowing systems to count as a replacement the reclassification of a lead or GRR service line to a non-lead service line would create a disincentive for systems to accurately characterize service lines in the inventory. Sufficient checks to prevent this from disincentivizing systems to create accurate inventories would greatly complicate the rule. Additionally, the EPA is concerned that, if water systems are allowed to count non-lead identifications as replacements, water systems could delay replacing known lead and GRR service lines by focusing efforts on identifying unknown lines that are more likely to be non-lead. Under the final rule, systems can subtract any lead, GRR, or unknown service lines newly discovered to be non-lead service lines from their replacement pool, which can reduce the number of service lines they are required to replace in the following program years; however, systems cannot count a reclassification as a replacement.

Some commenters similarly argued that water systems should not be penalized when property owners do not cooperate with providing access for a full replacement and to allow customer refusals to count as replacements. The EPA requires systems to conduct four outreach attempts per property owner to gain access and strongly encourages water systems take steps to ensure the likelihood of gaining access to conduct full service line replacement, such as seeking out alternate funding sources and engaging in comprehensive communication with their customers. The EPA disagrees with crediting water systems that are unable to gain access with a count towards full replacement because it could disincentivize efforts to obtain access. Therefore, customer refusals do not count as a service line replacement, and water systems must retain that service line as part of their replacement pool. The EPA also disagrees that water systems will be penalized if a property owner does not provide access. Water systems that do not replace all their lead or GRR service lines by the deadline because they lack access are not in violation of the treatment technique. Additionally, the final rule adds text in § 141.84(d)(5)(iv)(A) stating that a water system is not required to meet the cumulative average replacement rate if that system has, after the compliance date, replaced all lead and GRR service lines in the replacement pool that are under the control of the system, identified all unknown service lines in the inventory, and documented and submitted to the State the reasons the system does not currently have access to conduct full replacement of the remaining lead and GRR service lines in the replacement pool. Those systems, however, are required to continue to document the reasons the system does not have access, show those unreplaced service lines in the publicly available inventory, conduct tap sampling at these sites (where the sites are included in the sampling pool and the water system has access to sample), and notify consumers annually about their service line material, until those service lines are replaced. If service lines previously not under the control of the system come under the control of the system at any point prior to the removal of all lead and GRR service lines, these service lines are required to be replaced at the fastest feasible rate as described in § 141.84(d).

The EPA received comments requesting procedures for the rare occurrence of a lead or GRR service line and the need to simplify the compliance for systems with no or few lead or GRR service lines. The EPA agrees there should be a path for the rare lead or GRR service line that may be discovered and has therefore added a provision to the final LCRI that should a lead or GRR service line be discovered in a system with only non-lead service lines in their inventory, the system must replace the affected service line as soon as practicable but no later than 180 days after the date the service line is discovered. The agency also recognized in some circumstances, such as freezing conditions, it may not be practicable to conduct full service line replacement within 180 days after the date of discovery and therefore the system may request State approval for an extension of no later than one year after the date the service line was discovered to replace the affected service line. The request for an extension must be made no later than 90 days after the date of discovery of the affected service line. The EPA strongly encourages systems to replace lead and GRR services lines as fast as feasible. Once systems are comprised of only non-lead service lines implementation burden can be reduced as certain requirements of the LCRI are no longer applicable such as public education of service line material and first- and fifth-liter samples at LSL sites. The EPA notes systems that replace all

the discovered lead or GRR service lines prior to the start of the next tap monitoring period would not need to restart standard monitoring as described in § 141.86(c)(2)(iii)(H).

c. Final Rule Requirements

The final LCRI requires water systems to replace lead and GRR service lines at an average annual replacement rate of 10 percent calculated across a cumulative period, unless the system is eligible for a deferred deadline (see section IV.B.8 of this preamble) or required to replace service lines on a shortened deadline. The first cumulative average replacement rate must be assessed at the end of the third program year and is calculated by dividing the cumulative percent of service lines replaced by the number of completed program years (three in this case). Annually thereafter, at the end of each program year, systems must assess the cumulative average replacement rate by dividing the most recent cumulative percent of service lines replaced by the number of completed program years. The cumulative average replacement rate for systems on a 10-year deadline is 10 percent or greater each program year, and all water systems must make up any deficient percentages of their replacement rate for any program year by the applicable deadline for completing mandatory service line replacement.

The final LCRI adds a definition for ''program year'' in § 141.84(d)(5)(iii). The first mandatory service line replacement program year runs from the compliance date to the end of the next calendar year (December 31, 2028), and every program year thereafter is a calendar year (January 1 to December 31). A program year is a term used throughout the replacement and reporting requirements. The term is used to streamline reporting requirements (see section IV.N.1 of this preamble for more information) and describe annual activities for mandatory service line replacement.

The final rule also removes the regulatory text related to calculating the annual percent of service lines replaced and adds the term ''cumulative percent of service lines replaced''. To calculate the cumulative percent of service lines replaced, at the end of each program year, water systems must divide the total number of lead and GRR service lines replaced thus far in the program by the number of service lines within the replacement pool. The cumulative average replacement rate for systems on a 10-year deadline must be 10 percent or greater each program year.

Where the State determines that a shortened replacement deadline is feasible for a water system (*e.g.,* by considering the number of lead and GRR service lines in a system's inventory), the system must replace service lines by the State-determined deadline and by a faster minimum replacement rate. The State must make this determination in writing and notify the system of its finding. The State must set a shortened deadline at any time throughout a system's replacement program if a State determines a shorter deadline is feasible. This requirement also applies to systems eligible for a deferred deadline (see section IV.B.8 of this preamble). If the State determines a shortened deadline is feasible, systems must replace lead and GRR service lines at an average annual replacement rate calculated by dividing 100 by the number of years needed to meet the shortened deadline determined by the State, expressed as a percentage. For example, if a State determines a system can feasibly complete mandatory service line replacement on a shortened deadline no faster than 5 years, the system's average annual replacement rate would equal 100/5, or 20 percent. Systems must comply with the cumulative average replacement rate, where the first cumulative average replacement rate is assessed at the end of the program year that is at least one year after the shortened deadline determination, as determined by the State. If the system's shortened replacement deadline is less than three years, compliance is assessed on a schedule determined by the State.

Under the final LCRI, if a lead or GRR service line is discovered when the system's inventory is comprised of only non-lead service lines, the system must update their replacement pool with the discovered service line. The system must also comply with the requirements to conduct a full service line replacement of the affected service line as soon as practicable but no later than 180 days after the date the service line is discovered. Where a system determines that it is not practicable to conduct a full replacement within 180 days after the date of discovery, such as due to freezing ground conditions, the system may request State approval for an extension of no later than one year after date the line was discovered to replace the affected line. The request for an extension must be made no later than 90 days after the date of the discovery of the affected service line. See section IV.D.2 of this preamble for related inventory requirements in the proposed and final rules.

8. Deferred Deadlines

a. Rationale and Proposed LCRI Revisions

In the proposed rule, the EPA recognized that the default 10-year replacement deadline may be infeasible for some systems due to the large number or proportion of lines that would need to be replaced in 10 years. For these systems, the EPA proposed two ways that a system could establish eligibility for a deferred deadline to conduct service line replacements. The first eligibility criterion was proposed for systems with a high proportion of lead and GRR service lines in their distribution system relative to their total number of households served. The EPA used the feasibility analysis in the proposed LCRI to determine the fastest per-household replacement rate demonstrated to be affordable for systems with a high ratio of lead and GRR service lines. This feasibility analysis resulted in a value of 0.039 annual replacements per household served (39 replacements per 1,000 households served) (USEPA, 2023k). Also, see section IV.B.6.a of this preamble. In the proposed preamble, the EPA noted that the per-household replacement rate identifies an ''affordability threshold''; however, the fact that replacements were conducted also demonstrates that replacement at these rates is technically possible for these water systems. For more information, see the Technical Support Document for the proposed LCRI (referred to as ''proposed TSD''; USEPA, 2023k).

The proposed rule included a second deferred deadline eligibility criterion for systems that would be required to replace greater than 10,000 service lines per year under the proposed 10-year deadline. The EPA selected 10,000 as the proposed upper threshold for what is technically possible based on the replacement rate achieved in Newark, NJ, between January and March 2020 and the projected replacement rate that Detroit, MI, announced it would achieve. The EPA projected that only three to six systems nationwide would have more than 100,000 lines requiring replacement to qualify for a deferred deadline based on this criterion.

In the proposed rule, the EPA also highlighted that the requirement for the State to set a faster replacement rate where feasible also applies to systems eligible for a deferred deadline. Thus, the deadline calculated according to the EPA eligibility criteria would serve as the maximum allowable time to complete replacement and the State

could reduce that time if they determine the system can achieve a faster rate.

The EPA sought comment on the approach and basis of a deferred deadline for service line replacement at systems with a high proportion of lead and GRR service lines in their distribution system relative to the number of households served, the proposed threshold of 0.039 average annual number of replacements per household served, the proposed threshold of 10,000 annual replacements for systems with atypically high numbers of lead and GRR service lines, and an alternate threshold of 8,000 annual replacements. The EPA also requested any data available that would further inform the value for annual replacements per household served and the threshold for maximum annual replacement.

b. Summary of Public Comments and the EPA's Response

Some commenters recommended that deferred deadlines be removed from the rule because the statute does not require that a treatment technique be feasible for every single system in the nation. They recommended that, instead of deferred deadlines, water systems apply for variances to the 10-year service line replacement deadline or negotiate new deadlines through enforcement actions. The commenters stated that, because some large, regional water systems have replaced all their LSLs in 10 years or less, this service line replacement deadline has been demonstrated to be technically possible and reasonably afforded by large systems. The EPA agrees that SDWA does not require the EPA to demonstrate the feasibility of a NPDWR for every single water system, and the EPA acknowledges that SDWA includes provisions for variances and exemptions to address the possibility that not all water systems will be able to comply with an NPDWR by the compliance date. At the same time, the EPA recognizes that 500 to 700 systems are not likely to be able to replace all lead and GRR lines within 10 years (USEPA, 2024d). Furthermore, if 500 to 700 systems applied for a variance or exemption, the significant time and resources involved in the State's and the EPA's review and approval of these requests would significantly hamper implementation and enforcement of the service line replacement requirements and other treatment techniques in the LCRI, and require significant EPA resources, which could strain the EPA's efforts to publish guidance, properly oversee enforcement of the rule, and provide technical assistance to systems and States. Similarly, it is not realistic to assume that together States or the EPA would have adequate resources to devote to between 500 and 700 enforcement actions at approximately the same time to address the systems for whom a 10-year replacement deadline is infeasible. Instead, the final rule uses a process for establishing deferred deadlines to manage the systems for which a 10-year deadline is expected to be infeasible, based on the EPA's current analysis. Fewer annual service line replacements allow the system to spread the costs and replacement efforts of the replacement program across additional years to make the LCRI's replacement provision feasible. The final rule's deferred deadline provision also includes additional measures to ensure that systems meeting the criteria for a deferred deadline are required to replace service lines more quickly if a faster rate is feasible for the system (also see section IV.C of this preamble for service line replacement plan requirements). The EPA intends to create guidance to assist States in determining a system's fastest feasible replacement rate.

Some commenters supported the deferred deadline option for systems with a high proportion of lead and GRR service lines using the 0.039 annual replacements per household threshold. Some commenters recommended that the EPA use the number of service connections, rather than the number of households, to ease implementation as the number of service connections is already reported to the State via the service line inventory, whereas the number of households served may not be readily available to systems, and ambiguities in what constitutes a ''household'' could lead to inconsistent application of the LCRI nationwide. Additionally, the use of households may be a less meaningful measure to assess the scale of service line replacements needed; multi-household properties are generally served by a single service line. The EPA agrees that the number of connections provides a better estimate of the proportion of service lines that require replacement. The proportion of service lines requiring replacement, rather than the total number of service lines requiring replacement, was the basis for normalizing service line replacement rates by system size, and, thus, it is important that the method of normalization maintains this proportion. The EPA also agrees that revising the deferred deadline eligibility criterion to use per connection rather than per household simplifies the rule and eases implementation, which was identified in the 2021 LCRR review as a priority for the final rule. Finally, the use of service connections rather than households served does not result in major differences in the total number of systems projected to be eligible for a deferred deadline as compared to the use of households served (USEPA, 2024d). For these reasons, the final rule uses the number of connections to calculate the final rule's deferral threshold. The EPA refers to this threshold in the final rule as 39 annual replacements per 1,000 service connections rather than 0.039 annual replacements per service connection because this representation of the deferral option is more understandable and can ease implementation.

Some commenters claimed that the 0.039 replacements per household deferral rate threshold was too low and too many systems would be eligible, while other commenters said that it was too high and should be lowered to allow more systems to defer their deadlines. The EPA does not agree with arbitrarily lowering or raising the deferral threshold and notes that these commenters did not offer an alternate feasibility analysis to use instead of the proposed rule's feasibility analysis. The EPA derived the threshold for the final rule based on the EPA's updated feasibility analysis and the conversion to a per connection metric. Thus, the final rule's per-connection threshold is based on the best available data from the EPA's analysis of replacement rates actually achieved by systems (USEPA, 2024d). Therefore, the identified fastest feasible rate represents the fastest demonstrated rate to be both technically possible and affordable, using the currently available data, and there would be no basis for increasing or decreasing the threshold. There are many factors that can influence the technical possibility of a service line replacement rate, including seasonal weather changes that shorten construction, practical limitations on the number of street closures and interfering with other system operations, etc. By using replacement rate data from various real-world systems, such factors and any other encountered by these systems, are incorporated into the analysis of technical feasibility.

The EPA received comments about the data used to support the proposed deferral option for systems that would be required to replace more than 10,000 service lines per year to meet the 10-year deadline as well as the extended replacement timelines that resulted from it. Some commenters suggested that the 10,000 per year threshold is not feasible due to constraints such as

weather conditions, holidays, traffic disruptions, and logistical and planning limitations, and that a threshold of 8,000 service lines per year is more realistic or achievable. Other commenters suggested, without detailed explanations, that 8,000 replacements per year would not be a feasible standard. Other commenters suggested the EPA lower the threshold to 6,000 or 7,000 replacements per year, based on anecdotal experience of replacement rates at water systems. Other commenters suggested that Newark data, which was used to support the proposed rule's 10,000 threshold, should not be used in this determination at all because commenters theorized that much higher replacement rates could be achieved by cities that are much larger than Newark (commenters specifically mentioned Chicago, IL, and New York, NY, as examples), due to their relatively larger population size and associated resources. Other commenters argued that the Newark data should not be used for opposite reasons, stating that Newark was aided by substantial funding, technical assistance, and news coverage of service line replacement that helped Newark conduct an accelerated service line replacement program that is unlikely to be replicated nationwide. Some commenters were also concerned that the deferred deadline threshold of 10,000 allows some systems to defer their service line replacement deadline by decades, up to 45 years in the case of Chicago. These commenters said that given the harms of lead exposure from lead and GRR service lines and the urgency of service line replacement, these systems should be required to complete service line replacement sooner.

The EPA agrees with commenters recommending removing this deferred deadline option. For the final rule, the EPA has eliminated the deferral option based on a maximum number of annual replacements. The EPA made this change for several reasons. First, two deferral options unnecessarily complicate the implementation of the rule, as only three systems are estimated to be eligible for this deferral option, and two of those systems are estimated to also be eligible for the per-connection deferral option. Second, the EPA agrees with commenters that the underlying data used to determine the replacement maximum might not reflect replacement feasibility, given that the three systems estimated to be eligible were all larger than the system whose underlying replacement data was used to determine the proposed replacement maximum (Newark, NJ).

Additionally, the EPA acknowledges the challenge in establishing a single number of replacements per year upper threshold limit, based upon replacement data from one system (Newark, NJ) and projected data from a second system (Detroit, MI), to apply to all systems nationwide and which will continue to apply over the coming years. Therefore, due to the lack of replacement rate data on the scale required for systems with more than 100,000 service lines requiring replacement, it is not possible to determine a maximum number of replacements per year for such systems and setting a static national maximum based on two cities has limitations in this situation (see section IV.B.6 of this preamble on feasibility).

Some commenters suggested that systems with deferred deadlines should be required to conduct additional actions to protect public health while their replacement program is ongoing. Other commenters opposed such requirements, stating that these systems would have the most challenges in conducting service line replacement and that additional required actions to protect public health would take away resources from the systems' replacement program. The EPA does not agree with requiring additional actions to protect public health and agrees that additional requirements could draw resources away from service line replacement itself and prevent service line replacement from occurring at the fastest feasible rate.

The EPA shares commenter concerns that the maximum replacement deferral option could result in some systems having deferred deadlines that could go beyond multiple decades, which is inconsistent with the urgency of achieving lead and GRR service line replacement as quickly as feasible. Some commenters also suggested that the required replacement rate should increase over time due to increases in expertise, experience, and new technologies, especially after the 10-year deadline when most other programs have finished replacements and there is excess capacity in terms of available equipment and trained workforce. The EPA agrees that conditions can change over the course of a replacement program, such as the provision of new funding, expanded access to service lines (such as passage of a State or local law that overcomes barriers to access), or increased contractor availability as many systems finish their replacement programs. Additionally, the EPA agrees that systems that are eligible for the deferred deadline may be able to complete service line replacement earlier than the deferred deadline, thus the final rule provides that systems eligible for a deferred deadline may be put on a shorter deadline where the State determines it is feasible. The final rule builds on this concept by allowing a system that is eligible for a deferred deadline to begin its service line replacement program using a deferred deadline, and associated cumulative average replacement rate, that is no longer than needed to conduct at least 39 annual replacements per 1,000 service connections per year; the system must identify the deferred deadline and associated cumulative average replacement rate that it is using in its service line replacement plan along with other information supporting the system's determination that a faster rate is not feasible (as described in § 141.84(c)(1)(x)). Then, as soon as practicable, but no later than the end of the second program year, the State must evaluate the system's deferred deadline and associated cumulative average replacement rate to determine if it is the fastest feasible rate for the system. The State must either approve the continued use of this replacement rate, or, if the State determines a faster rate of replacement is feasible, the State must set a new deferred deadline and replacement rate to ensure that the system is conducting service line replacement at the fastest feasible rate. The State must review the replacement rate information submitted by the system in their service line replacement plan every three years to ensure that the deferred deadline and associated replacement rate is regularly assessed and updated throughout the replacement program, and that systems eligible for deferred deadlines are continuing to replace service lines at the fastest feasible rate. These provisions are intended to inform the State's determination of whether the replacement rate is the fastest feasible. This process will also allow systems and States to respond to changing conditions to ensure they are replacing service lines as quickly as feasible (see sections IV.B.6 through 8 of this preamble).

Some commenters suggested that replacement timelines be determined by a system's 90th percentile lead level or CCT status and that systems with lower lead levels should be allowed to start later or given additional time to complete their replacement program. The EPA disagrees with this recommendation for several reasons. There is no safe level of lead in drinking water and the EPA is not aware of data

showing that accelerated service line replacement is less feasible for systems with lower lead levels. As such, the recommendation is inconsistent with the SDWA requirement to promulgate NPDWRs that ''prevent known or anticipated adverse effects on the health of persons to the extent feasible'' (SDWA 1412(b)(7)(A)). The need for service line replacement at the fastest rate feasible is described further in section IV.B.2 of this preamble.

c. Final Rule Requirements

The final rule includes a deferred deadline option for systems with a high proportion of lead and GRR service lines to total service lines. The final rule sets the deferral threshold at 39 annual replacements per 1,000 connections based on the updated feasibility analysis (see section IV.B.2 of this preamble) and conversion from a per-household metric to per-connection. To reduce the complexity of this deferral option, the final rule refers to the threshold as 39 annual replacements per 1,000 connections instead of 0.039 replacements per connection per year. Additionally, the final rule is not including the second deferral option for systems required to replace more than 10,000 service lines per year.

To ensure that systems continue to replace at the fastest feasible rate throughout their replacement program, the final rule requires the State to set a faster replacement rate where feasible. The final rule also requires States to regularly make determinations in writing that the deferred deadline and associated replacement rate is the fastest feasible, based on the initial service line replacement plan and subsequent updates from the system. More specifically, by the end of the second program year, and every three years thereafter, the State must evaluate the system's use of the deferred deadline and associated replacement rate to determine if it is the fastest feasible rate for the system. The State must either approve the continued use of the deferred deadline and associated replacement rate, or set a new replacement deadline and associated replacement rate so that replacements are conducted as fast as is feasible for the system. States must report these determinations to the EPA. In their publicly accessible replacement plan, systems with deferred deadlines must document their deferred deadline and associated replacement rate, which must be at least 39 annual replacements per 1,000 service connections or faster if feasible, the annual number of replacements required, the length of time (in years and months), the date of completion, and other information supporting the system's determination that replacing lead and GRR service line by an earlier date and faster rate is not feasible. These systems must also provide in their plans additional information (*e.g.,* the annual number of service lines replaced, the total number of known lead and galvanized requiring replacement lines remaining, status of identifying unknown service lines, etc.) that supports the system's deferred deadline and associated replacement rate. The EPA intends to issue guidance to assist States in determining the fastest feasible rate for systems.

9. Summary of the Feasibility of Mandatory Service Line Replacement

a. Overview

In considering the full record for this rulemaking, the EPA concluded that the mandatory service line replacement requirement is feasible. It applies only to service lines that a system can access in order to conduct a full service line replacement. It recognizes that State or local laws, or water tariff agreements, as well as a customer's consent, may affect a system's ability to access a service line to conduct a full replacement. It establishes a 10-year deadline, with a pathway for a small percentage of systems to obtain a deferred deadline, while requiring States to set a faster rate where feasible. This approach ensures that service line replacement requirements do not overburden primacy States with case-by-case feasibility determinations, requests for variances or exemptions, or enforcement actions. The EPA has committed to developing guidance to assist States in evaluating relevant data to determine the fastest feasible replacement deadline for a system and improve their ability to set faster rates where feasible.

b. Summary of Public Comments and the EPA's Response

Some commenters theorized that in the past, systems with replacement rates documented by the EPA were able to replace lead and GRR service lines more quickly than future systems will be due to the lack of ''administrative burden and associated rigidity of the proposed LCRI framework'' and that the feasibility analysis for the proposed LCRI did not take this into account. The EPA does not agree with these comments and highlights that mandatory service line replacement and other LCRI provisions will increase the replacement rates relative to previous voluntary programs (see section IV.B.6 of this preamble for further discussion). Additionally, other rule requirements could increase public support and knowledge of service line replacement and benefit future service line replacement programs. For example, the public education requirements in the rule, such as annual notification to consumers that their residence is served by a lead or GRR service line and making inventory with addresses and service line replacement plan publicly available, will create greater awareness of the remaining lead and GRR service lines and result in more property owners interested in participating in the LSLR program. Risk reduction measures, including for full service line replacement, will aid in garnering public support or broader awareness of replacement programs (see section IV.J.2.a of this preamble and ''Public Education and Engagement'' in the proposed LCRI for examples of public education and community engagement supporting service line replacement efforts).

Furthermore, the EPA has launched several technical assistance programs specifically to assist with service line replacement, including the Lead Service Line Replacement Accelerators and the GLO Initiative. Since January 2023, the EPA partnered with 40 communities across four States (Connecticut, New Jersey, Pennsylvania, and Wisconsin) through the LSLR Accelerators pilot program to address existing barriers and accelerate progress towards LSL identification and replacement (USEPA, 2023m). The GLO Initiative takes the lessons learned and best practices from the LSLR Accelerators program to expand LSLR technical assistance to approximately 200 additional underserved and disadvantaged communities (USEPA, 2024e). The EPA has also published resources for developing and maintaining service line inventories (USEPA, 2022c; USEPA, 2023n; USEPA, 2023o) and for planning and conducting service line replacement (USEPA, 2023p). In addition to the EPA resources, lessons learned, best practices, and other previous experience documented and publicly shared by water utilities and drinking water organizations will provide further resources for systems as they manage mandatory service line replacement programs. The EPA is aware of additional systems that have conducted or are beginning to conduct their replacement programs (EDF, 2024), which will provide further learning opportunities for other systems to develop and optimize their service line replacement programs. Documents describing lessons learned and advice for future systems, which have previously been published (*e.g.,* LSLR

Collaborative, Denver Water Lessons Learned; see the full list in the final TSD (USEPA, 2024d)), are also expected to continue to evolve as service line replacement programs continue. As another recently announced example, the mayors of the cities of Chicago, IL, Milwaukee, WI, and Detroit, MI, pledge through the Great Lakes Lead Partnership to facilitate close, purposeful collaboration among mayors and water utilities to surmount common challenges, highlight emerging best practices, and replicate successes from city to city (City of Detroit, 2024). Furthermore, unprecedented funding is available from BIL and other sources to support service line inventory and replacement efforts (see section III.G of this preamble).

i. Additional Discussion of Technical Possibility

In the proposed LCRI's feasibility analysis, the EPA explicitly assumed that the market would correct for any potential shortages in labor, filters, or material for service line replacement, especially because compliance with the mandatory replacement requirement would not begin until three years after the compliance date. The EPA sought comment on this assumption and the ability of the market to respond to the service line replacement requirements. Some commenters, including relevant labor and industry associations, agree that the market can meet the demand for the potential shortages, while other commenters expressed concern about potential shortages when conducting required replacement simultaneously with other systems. While these commenters listed anecdotal examples of the amount of time it currently takes to receive various materials, these data do not show that a 10-year deadline will be infeasible for a large volume of systems, as they are reflecting the conditions within a single system at the one point in time, rather than the conditions at a national level at the LCRI compliance date (*i.e.,* 2027), when mandatory service line replacement must begin. Based on the record and comments as summarized below, the EPA disagrees that nationwide service line replacement in 10 years would be challenged or rendered infeasible by supply chain delays, labor shortages, and competition for workers and materials.

As discussed in the proposed LCRI, simultaneous full service line replacement over a large geographic area remains feasible (*i.e.,* no market or labor shortages), as demonstrated by the fact that LSLR has been simultaneously conducted in several places in recent years (*e.g.,* Flint, MI, Newark, NJ, Denver, CO, etc.). Furthermore, four States (Illinois, Michigan, New Jersey, Rhode Island) require systems to conduct mandatory service line replacement are all currently in effect. These States also have relatively high lead and GRR service line prevalence compared to other States (see section V.B.2 of the proposed preamble (88 FR 84912, USEPA, 2023a)), which suggests that these States also expect full service line replacement to be successfully implemented over a large geographic area simultaneously.

Additionally, commenters were concerned about the ability of the market to meet the demands of full service line replacement, including concerns about the availability of filters, contractors and plumbers, and replacement materials. Some commenters also raised concerns about the potential for increased prices or ''price gouging'' due to higher demand and competition. Some commenters requested that the EPA undertake a comprehensive assessment of labor and material markets. The record continues to support the agency's assumption at proposal that the market will correct for any potential shortages in the three years before the LCRI compliance date. The EPA obtained confirmatory data with respect to the share of the copper and PVC pipe supply as well as the share of domestic copper and PVC production needed to achieve full replacement to better understand the potential impacts on the availability of these materials. Assuming that all water systems replace lines with a single material (which represents the upper bound because systems may utilize a combination of materials), the EPA estimates that full service line replacement will require 35.61 million pounds of copper, or 2.06 percent of the average annual share of domestic production, and 57.09 million pounds of PVC, or 0.22 percent of the average annual share of domestic production (ICF, 2024a). Accounting for the proportions of different materials used in service line replacement, the EPA estimates that the share of domestic production necessary to meet the estimated raw material demands is 0.84 percent for copper and 0.07 percent for PVC (Lee & Meehan, 2017). Thus, the LCRI should not create significant raw material demands, and the market should be able to adjust to meet the modest increase in demand created by the LCRI. Three companies from the copper industry affirmed their readiness to ensure a seamless supply of copper for the increased demands from the LCRI and mentioned taking various steps to upgrade operations, hiring new personnel, adding shifts to their existing infrastructure, and investing in a copper tube mill (Copper Development Association Inc. (CDA), 2024a). Additionally, the Copper Development Association, the market development, engineering and information services arm of the copper industry, stated that there is sufficient domestic supply of copper to meet the need for replacing lead pipes (CDA, 2024b).

One commenter from a State with many rural communities expressed their concern that the filter market would be dominated by larger cities and States, making filters harder for smaller systems to access and more expensive. To address these comments, the EPA obtained the confirmatory data with respect to filter availability to meet all of the filter provisions of the final rule (*i.e.,* multiple lead action level exceedances, full or partial service line replacements, certain service line disturbances, small system flexibility). The data from multiple sources confirm the EPA's assumption that the filter market will sufficiently expand to meet these needs over the next 10 years. For example, one source estimates the market will reach $120.38 billion by 2032 with a compound annual growth rate of 10.79 percent and is projected to nearly triple in size in the next decade (Razgaitis, 2023). The EPA also examined filter usage in Denver Water's Lead Reduction Program (LRP) to assess if they encountered filter supply issues during LRP implementation. The full program began in 2020 with nearly 100,000 households participating and a calculated filter adoption rate of 80 percent (Harvard School of Public Health, 2024). Surveys from Denver LRP indicate that 93 percent of households filter their drinking water using filters from Denver Water with 68 percent report using filtered water for cooking (Harvard School of Public Health, 2024). Additionally, the EPA found that other States are turning to filters to reduce levels of lead in drinking water. For example, Michigan's Filter First law requires schools and child centers to develop a drinking water management plan, install filters, and test filtered water for lead. These State laws assume the market will be able to meet the demands of the program. Finally, two commenters, one representing a filter manufacturer and the other representing the point-of-entry and point-of-use filter manufacturing industry, both indicated their expectations that the industry will be able to meet the increased filter demand resulting from the LCRI (Docket

ID EPA–HQ–OW–2022–0801, Comment submitted by the Brita brand and The Clorox Company, Comment submitted by Water Quality Association (WQA)).

Some commenters had concerns about the availability of workers to conduct service line replacement within 10 years while other commenters agreed that the labor market can meet the demand created by the mandatory service line replacement provisions. One commenter, representing a trade union, highlighted its numerous training programs and affirmed its capacity to develop the workforce to complete LSLR within the next 10 years (Laborers' International Union of North America (LIUNA), 2024). In the proposed LCRI, the EPA had noted its assumption that the three years before water systems must begin to conduct service line replacement would give the market time to adjust and correct for any potential labor shortages. While some commenters noted that the construction and infrastructure sectors reported backlogs for eight to nine months in 2023, those backlogs are not a measure of hardship, as backlogs do not suggest that construction firms are behind schedule or having difficulties completing contracted jobs, but rather there is consistent work indicating a safer investment for building capacity. The greater the duration of the backlog, ''the more comfortable contractors can be with their near-term economic circumstances'' (Associated Builders and Contractors, 2023). In response to comments and to evaluate whether the EPA's assumption regarding the market is correct, the EPA reviewed data such as the projected job growth in labor markets that are relevant to service line replacement to evaluate the demand created by the final rule's service line replacement requirements, including plumbers and pipefitters, as well as operators of heavy equipment. A study from the United Association of Union Plumbers and Pipefitters in partnership with the BW Research Partnership for E2 concluded that lead pipe replacement programs would create an estimated 26,900 construction jobs per year in 10 years, plus additional jobs through supply chain effects. More specifically, the study estimates that 10 percent of the newly created jobs would be in pipefitting occupations and 7.2 percent would be in pipelaying/pipefitting occupations (E2, 2021). Those findings exceed the EPA estimate using anecdotal evidence that it will take the full-time equivalent of 17,000 crews to replace 8.8 million lead and GRR service lines per year with replacement efforts involving approximately 3.6 percent of the pipe worker labor force and 3.5 percent of the excavator workforce (ICF, 2024b). The studies determining the percentage of the workforce necessary to meet the LCRI are reinforced by activities around the country. Unions—the Laborers' International Union of North America, the United Association of Plumbers and Pipefitters, and the International Union of Operating Engineers to name three—are already training workers in LSLR and putting them to work across the country (The White House, 2024a). Additionally, the White House has created nine White House Workforce Hub cities to train and connect American workers to jobs created by the BIL funding and other Federal investments (The White House, 2024b). The EPA documented in the proposed rule two water systems (Detroit, MI, and Newark, NJ) and one State (Rhode Island) that have planned or already implemented apprenticeship or training programs to increase contractor capacity during upcoming LSLR projects (see section V.B.2 of the proposed preamble (88 FR 84912, USEPA, 2023a)). These studies and activities demonstrate that the skilled workforce is sufficiently robust to meet the demands of the final LCRI's service line replacement requirement and will be supplemented by additional job training.

C. Service Line Replacement Plan

1. Rationale and Proposed LCRI Revisions

The service line replacement plan is a critical element of the LCRI. A well-developed plan can facilitate timely compliance with the mandatory service line replacement requirements and, therefore, provide greater public health protection and replacement program efficiency. Under the 2021 LCRR, the EPA required systems to submit an LSLR plan by October 16, 2024, so water systems could (1) quickly commence a systemwide replacement program following a lead trigger level or action level exceedance and (2) be ready to complete customer-initiated LSLR requests regardless of their 90th percentile lead level. The LSLR plan requirements promulgated in the 2021 LCRR required all water systems with at least one lead, GRR, or unknown service line to create and submit to the State a replacement plan containing sufficiently detailed information on six elements: a strategy for determining the material of unknown service lines, a procedure for conducting LSLR, an approach to informing customers before replacement, a flushing procedure for customers, a prioritization plan (based on, but not limited to, known LSLs and LSLR for communities of concern and populations most sensitive to the effects of lead), and a funding strategy. Systems serving more than 10,000 persons must also include in the plan a recommended LSLR goal-based rate in the event of a lead trigger level exceedance.

For the LCRI, the EPA proposed to expand the 2021 LCRR LSLR plan to require two additional elements. For the first new element, systems must develop a communication strategy to inform residential and non-residential customers (property owners) and consumers (*e.g.,* tenants) served by the system about the service line replacement plan and program. This proposed plan element assures that both the consumers and owners of rental properties are aware of the water system's program to replace lead and GRR service lines and ensures that both tenants and their landlords have information about the program. The second new element requires the identification of any laws, regulations, and/or water tariff agreements that affect the system's ability to gain access to conduct full service line replacements, such as any requirements for customer consent or customer cost-sharing. In the proposal, the EPA explained that this element would support and encourage water systems to comply with the requirement to conduct full service line replacement, especially given that the water system's self-identified elements of control determine whether the water system must conduct replacement. The requirement to make these potential access barriers public would also facilitate public engagement on the effect of State or local laws or water tariff agreements on a system's access for full service line replacement.

In addition to the new elements, the proposed LCRI modified the plan element requiring a funding strategy to specifically require systems to describe whether and how the system intends to assist customers who are unable to pay for replacement where the water system intends to charge customers for the cost of all or any portion of the replacement because it is authorized or required to do so under State or local law or water tariff agreement. In addition, the EPA proposed to require that the plan be made available to the public, and systems serving more than 50,000 persons must make the plan publicly available online. Finally, the EPA proposed to remove the element for systems serving more than 10,000 people to recommend a goal-based replacement rate because the agency proposed to eliminate the lead trigger level.

The proposed rule did not require water systems to update their plan, however the EPA sought comment on a requirement for systems to update their service line replacement plans if there are any changes, such as changes to laws and policies applicable to full service line replacement. The public accessibility requirements, together with the plan's additional and revised elements, were proposed to ensure that property owners and consumers have information about the water system's plans for conducting service line replacements, including any requirements for customer consent or cost-sharing.

2. Summary of Public Comments and the EPA's Response

Some commenters suggested the EPA require more specific prioritization criteria for service line replacement in the plan. Some commenters specifically recommended that water systems be required to prioritize replacement in accordance with health and socioeconomic indicators, and at hospitals, nursing homes, child care facilities, schools, and for disadvantaged consumers. Some commenters also suggested that the EPA should provide guidance for developing service line replacement plans, including a template, and provide technical assistance to help systems design and implement their prioritization strategies. The EPA disagrees that the national requirements for the replacement plan should be required to include more specific prioritization criteria because every community is different, and each community is better positioned to identify the best way to prioritize service line replacement. For example, one water system may serve a community with housing that also contains lead paint, so the water system could prioritize replacement in that community to reduce disparities in potential lead exposures. The EPA encourages water systems to engage with their citizens when devising prioritization strategies to better understand their communities' needs. The final LCRI aims to advance equitable service line replacement by enhancing transparency between the water system and the community on the practices adopted and progress made towards replacing all lead and GRR service lines under the control of the system, *e.g.,* by requiring the service line inventory and plan to be made publicly accessible or available and by adding or revising elements in the plan. Making the replacement plan available to the public will increase community awareness of the prioritization strategy, the laws affecting the system's ability to gain access to conduct full service line replacement, and the replacement program. Publication of the service line inventory will ensure water systems can be held accountable by the community for replacing lead and GRR service lines in accordance with their plans.

Some commenters recommended that water systems with lead connectors or connectors of unknown material should be required to develop a replacement plan (even if the system does not have any lead, GRR, or unknown service lines) that includes a strategy to identify and replace them. The EPA disagrees with these comments because the plan is intended to support the systems' compliance with the requirements to replace all lead and GRR service lines, and there is no requirement in the LCRI for systems to establish a program to locate and replace lead connectors other than those that would be replaced with a lead or GRR service line, or connectors that are otherwise encountered by the system.

Other commenters agreed with the EPA's proposed requirement that systems identify State and local laws, and water tariff agreements that affect a water systems ability to gain access to conduct full service line replacement because they may increase transparency around a utility's processes and potentially enhancing public discussion around changes to align laws and policies to support expanded access and swift and equitable service line replacement. Commenters also affirmed the EPA's expectation that this requirement could help resolve confusion and lack of clarity around what, if any, impact such State and local provisions actually have on access and financing issues. The final LCRI requires systems to include the citations to the specific laws, regulations, or water tariff agreement provisions. In some cases, this exercise may help systems realize that they already have access to the full service line for replacement. Moreover, making this information publicly available may facilitate public engagement on the effect of these laws and water tariff agreements on a system's access for full service line replacement. The EPA has included examples of systems, localities, and States, such as the 2024 act passed by the State of Indiana (Indiana General Assembly, 2024), that have successfully changed existing laws or agreements to overcome access barriers in section IV.B.3 of this preamble.

The EPA received comments about lead-lined galvanized service lines, with some recommending that discovery of one lead-lined galvanized service line should prompt the system to assume all galvanized service lines are lead-lined. The EPA agrees that lead-lined galvanized service lines can contribute significant amounts of lead in drinking water, and, as the agency previously stated in the 2021 LCRR and proposed LCRI, these service lines are covered by the definition of an LSL (USEPA, 2022c; USEPA, 2023a) because a portion of the service line is made of lead. The EPA disagrees that discovery of one lead-lined galvanized line should, as some commenters recommended, require the system to categorize all galvanized service lines in the distribution system as lead-lined. The EPA found only limited information about the prevalence of these service lines nationwide, and commenters did not provide data to support the assumption that if one lead-lined galvanized service line is discovered, all galvanized service lines in the system are lead-lined. To address the possibility that systems may have (or find in the future) lead-lined galvanized service lines, the EPA is finalizing a new requirement for systems that identify any lead-lined galvanized service lines to include in their service line replacement plan a strategy to determine the extent of the use of lead-lined galvanized service lines in the distribution system (see section IV.D.1.b.iv of this preamble). If a water system is aware of their presence in the distribution system, this plan requirement can help systems understand how widespread their use may be.

Under the proposed LCRI, the EPA sought comment on whether the service line replacement plan should be updated if there are any changes, such as changes to laws and policies applicable to full service line replacement. Some commenters supported a requirement to update the plan, noting that there may be changes that impact full service line replacement. One commenter stated that updates to the plan should be required no sooner than the next service line inventory update or no sooner than 12 months after the previous submission, whichever is longer. Other commenters stated that systems should be required to update the plan if there are changes to applicable legal or contractual provisions or the service line inventory. The EPA agrees that water systems should update their plans to accurately reflect the current service line replacement plan, including any applicable laws, regulations, or water tariff agreements. Maintaining an up-to-date service line replacement plan will facilitate customer and consumer

engagement and cooperation with the system's service line replacement program as well as State oversight.

The EPA is also revising the plan requirements for water systems that are eligible for and plan to use a deferred deadline in response to comments that that plans may need to be updated for changes in circumstances. The system and the State will regularly evaluate the system's use of the deferred deadline and associated replacement rate, which may change over time as conditions change. These systems must document in the plan (1) the basis for the system's eligibility for a deferred deadline, showing that 10 percent of the total number know lead and GRR service lines in the replacement pool exceeds 39 annual replacements per 1,000 service connections and any additional supporting information, (2) the fastest feasible replacement rate and associated deferred deadline that the system has identified in which it can complete its replacement program, which may not to be less than 39 annual replacements per 1,000 service connections, and (3) information supporting the system's determination that an earlier deadline and faster rate than 39 annual replacements per 1,000 service connections is not feasible. The EPA expects this information may change as systems identify unknown service lines and update their replacement pools, which may affect the total number of known lead and GRR service lines and the annual number of replacements required. These requirements will provide the State with information necessary for its determination of the system's ability to replace service lines at a faster rate; however, the State may also require the system to provide additional information for the State to consider in its assessment of the continued use of a deferred deadline and the fastest feasible replacement rate. Requiring systems to include information about their deferred deadlines in the replacement plan along with the system's justification as to why it thinks one is necessary also improves transparency between the system and the public by explaining the reasons why the system may take longer than 10 years to replace all lead and GRR service lines.

Some commenters recommended that the EPA require more systems to make their service line replacement plans publicly available online by reducing the threshold to systems serving greater than 10,000 persons rather than systems serving more than 50,000 persons, as proposed. One commenter recommended that there should be no threshold and all systems should publish their plans online. The EPA disagrees with this suggestion because the EPA is concerned about the feasibility and ability of systems serving 50,000 people or fewer to maintain and update websites. In addition, the threshold is consistent with the recently promulgated requirement for systems serving more than 50,000 persons to make the Consumer Confidence Report available online (USEPA, 2024c).

3. Final Rule Requirements

Under the final rule, all water systems with at least one lead, GRR, or unknown service line in their inventory must create a service line replacement plan by the LCRI compliance date. It is important that systems have developed a comprehensive and detailed plan by the compliance date so that systems have planned for important aspects of their service line replacement program and can implement their program accordingly and begin replacing lead and GRR service lines upon the compliance date if not sooner. The EPA is retaining most of the service line replacement plan elements that were proposed. This includes the requirements for water systems to include in their service line replacement plans: (1) A description of a strategy to identify the material of all unknown service lines in the inventory; (2) a standard operating procedure for conducting full service line replacement (*e.g.,* techniques to replace service lines, plans for procurement of materials, or plans for utilizing contractors); (3) a communication strategy to inform consumers and customers before a full or partial lead or GRR service line replacement; (4) a procedure for consumers and customers to flush service lines and premise plumbing of particulate lead following disturbance of a lead, GRR, or unknown service line following full or partial replacement of a lead or GRR service line; (5) a funding strategy for conducting service line replacement; (6) a communication strategy to inform residential and non-residential customers and consumers (*e.g.,* property owners, renters, and tenants) served by the water system about the service line replacement plan and program; and (7) identification of any laws, regulations, and water tariff agreements that affect the water system's ability to gain access to conduct full lead and GRR service line replacement, including the citation to the specific laws, regulations, or water tariff agreement provisions.

The final LCRI clarified the plan element requiring systems to create a prioritization strategy. The final rule clarifies the prioritization strategy must be based on factors including but not limited to known lead and GRR service lines and community-specific factors, such as populations disproportionately impacted by lead and populations most sensitive to the effects of lead. This clarification does not change the intent of the proposed LCRI requirement, but instead clarifies the plan element to include community-specific factors. Every community is different, and each community is better positioned to identify the best way to prioritize service line replacement.

The final LCRI also includes new plan requirements for any water system that identifies any lead-lined galvanized service lines in the development of the service line inventory (the baseline inventory or any update). One requirement consists of developing a strategy to determine the extent of the use of lead-lined galvanized service lines in distribution system and categorizing (or recategorize if they were categorized as non-lead) the lines as LSLs for mandatory service line replacement. Lead-lined galvanized service lines contain a lead inner lining and are, therefore, considered LSLs in the final rule. If a water system is aware of their presence in the distribution system, it is important to understand how widespread their use may be to accurately identify all LSLs in the distribution system.

For a water system that is eligible for and plans to use a deferred deadline, the plan must include the following items. First, the system must include documentation of the system's eligibility for a deferred deadline that shows that 10 percent of the total number of known lead and galvanized requiring replacement service lines in the replacement pool exceeds 39 annual replacements per 1,000 service connections. Second, the system must include documentation detailing mandatory service line replacement under a deferred deadline at the fastest rate that system identifies as feasible, including the annual number of replacements required, the length of time (in years and months), the date of completion, and the associated cumulative average replacement rate the system considers to be the fastest feasible but no slower than the replacement rate corresponding to 39 annual replacements per 1,000 service connections, as well as the annual number of replacements required, the length of time (in years and months), and the date of completion for this deadline and replacement rate. Third, the system must include information supporting the system's determination that replacing lead and GRR service

lines at a shorter deadline and faster rate than identified in the plan is not feasible.

The final LCRI also requires water systems to annually update the service line replacement plan to reflect any new or updated information, including any changes that affect the system's ability to conduct mandatory full service line replacement (*e.g.,* new State or local laws and water tariff agreements, a new strategy for identifying the material of unknown service lines based on inventory validation, or lessons learned from risk communication efforts in the community), and to submit these updates to the State annually. If the plan does not need to be updated, the water system may then certify to the State that the plan has no updates. Water systems may cease annual certifications to the State when there are no lead, GRR, and unknown service lines left in the inventory.

Systems with deferred deadlines, in addition to annual updates, must every three years after the initial submission of the plan, update their replacement plan with the latest: (1) Documentation of the system's eligibility for a deferred deadline; (2) documentation detailing the system's identified replacement rate for completing mandatory service line replacement under a deferred deadline; and (3) information supporting the system's determination that replacing lead and GRR service lines at a shorter deadline and faster rate than documented in the plan is not feasible (see section IV.B.8 of this preamble for more information on deferred deadlines). The State will then review these updates and determine by the end of the fifth program year, and every three program years thereafter, if a shorter deadline and faster rate are feasible. The State must also report to the EPA the system's expected completion date and an explanation for why this date is the fastest feasible.

Under the final LCRI, water systems are required to make their plan publicly accessible, and systems serving more than 50,000 persons must make the plan available online. The publicly accessible plan must also reflect any updates no later than the deadline to submit the updated plan to the State.

D. Service Line Inventory

1. Baseline Inventory and General Inventory Requirements

a. Rationale and Proposed LCRI Requirement

A comprehensive and accurate service line inventory is critical to a water system's ability to inform consumers that may be affected by lead contamination in their drinking water and to comply with the requirements in this rule to identify the material of unknown service lines and replace lead and GRR service lines by a specified deadline. The service line inventory provides the foundation for a water system to address a significant source of lead in drinking water, lead and GRR service lines, and strengthen public health protection. Inventories are also critical for developing tap sampling plans and conducting targeted public education. Inventories can help water systems and consumers (persons served at a service connection) determine the source of high lead levels in drinking water at a home or building and the possible solutions for reducing exposure to lead.

Inventories are critical to the EPA's administration of targeted funding and financial assistance programs, such as the WIIN Act lead remediation grants, low- to no-cost financing through the DWSRF, including supplemental funding from the BIL, and low-cost financing through the WIFIA program (see section III.G of this preamble for more information on the BIL and other financial resources). In America's Water Infrastructure Act of 2018, Congress recognized the importance of increasing the understanding about the extent of LSLs in the nation by mandating the EPA to include an assessment of costs to replace LSLs in the 7th Drinking Water Infrastructure Needs Survey and Assessment (referred to as the Needs Survey) to inform the distribution of DWSRF BIL LSL funding to States.

The proposed LCRI built upon the LSL inventory requirements in the 2021 LCRR. Under the 2021 LCRR, all water systems must develop an initial inventory of service lines using available records, make it publicly accessible or available, and submit it to the State by October 16, 2024. The EPA did not propose to change the LCRR initial inventory compliance date to ensure that systems make continued progress towards inventory development. However, the EPA proposed in the LCRI to require all water systems to update the LCRR initial inventory with information about connector materials and locations along with any new information on service lines by the rule compliance date (three years after promulgation). The updated initial inventory, referred to as the baseline inventory, aims to better position water systems to immediately begin mandatory full service line replacement upon the LCRI compliance date and to better protect public health by improving transparency and consumer awareness of where they are served by service lines and connectors that contain lead.

In the 2021 LCRR, the EPA determined that it is practical and feasible for water systems to prepare an initial inventory by October 16, 2024, and update it because the rule did not impose a deadline on water systems to determine the composition of every service line categorized as lead status unknown or ''unknown'' (USEPA, 2020e). The EPA also considers submission of the baseline inventory by the LCRI compliance date to be feasible because: (1) Systems are not required to identify all unknown service lines until the mandatory service line replacement deadline, (2) systems have had opportunities to gather information about their service lines to meet the requirements of the 1991 LCR, including conducting materials evaluations for tap sampling and for systems that exceeded the LCR's lead action level, where systems identified the number of LSLs, (3) several States have already required water systems to create service line inventories, and (4) systems are required to review available records and submit an LCRR initial inventory by October 16, 2024.

For the LCRI, the EPA proposed to also require water systems to include connector materials in their service line inventories. The EPA proposed to require systems to conduct a review of specified sources (*e.g.,* construction and plumbing codes, records, and other documentation) on connectors, similar to the requirement for systems to review these specified sources for service line material information under the 2021 LCRR, and to identify and track connector material when encountered during normal operations and when lead connectors are replaced. The EPA proposed to require the inclusion of lead connectors in the inventory because it provides additional information to the system and public on potential sources of lead in drinking water, which could prompt actions to reduce lead exposure and provide systems with information to consider during Distribution System and Site Assessment (DSSA). As stated in the ''Guidance for Developing and Maintaining a Service Line Inventory'' (or the LCRR Inventory Guidance) document, this information would allow systems to track and manage this potential source of lead, improve asset management, and increase transparency with consumers (USEPA, 2022c). As stated in the proposal, tracking the locations of connectors, including replaced lead connectors, can provide additional information relevant to assess potential health risks, considering lead

from an upstream source can adsorb onto galvanized pipe over time.

b. Summary of Public Comments and the EPA's Response

i. Baseline Inventory

The EPA received many comments on the inclusion of lead connectors in the baseline inventory and review of specified sources for connector materials. Some commenters supported the proposed requirement because connectors can be a source of lead contamination. One State commenter noted that the inclusion of these requirements is consistent with that State's regulatory approach regarding connectors and that the deadline to submit the LCRI baseline inventory three years after rule promulgation is ample time for systems to check their records. Some commenters recommended stricter requirements, such as physically verifying each connector of unknown material or ''never lead'' connector. Other commenters disagreed with the proposed requirement for various reasons, including (1) the value is not clear for inventorying connectors when the proposed rule already requires water systems to remove lead connectors upon encounter, (2) the burden and inefficiency to require a review of specified sources for connectors when systems have already begun or completed a review for service lines, (3) the burden it would impose on States to send out new inventory templates to all their systems, (4) the limited public health benefit, and (5) the lack of available records for connectors. Many commenters stated that they were under the impression that the EPA would not change the 2021 LCRR inventory requirements in the LCRI. Commenters also requested the inclusion of connectors to be optional to align the proposed requirements with past inventorying requirements. Some commenters that opposed the requirement to conduct a review of specified sources for connector materials generally were, however, in support of identifying connector materials and locations when encountered during normal operations. Lastly, commenters asked the EPA to specify which connectors along the service line must be included in the inventory, how many connectors needed to be reported along the line, and if multiple connectors along the line needed to have unique identification.

The EPA acknowledges the burden associated with including a review of specified sources for connector materials and locations in the LCRI baseline inventory. The EPA also understands that some systems may lack records on connector materials. However, the agency disagrees that it is not practical or feasible to conduct a review of specified sources and include information on connector materials based on those sources in the LCRI baseline inventory. Systems in some States (*i.e.,* Illinois, Michigan, and New Jersey) have already begun inventorying lead connectors because lead connectors are included in the State definitions of an LSL. The sources that systems must review are clearly stated in the final rule. Systems also do not need to re-review sources of service lines that they have already reviewed if they know that connector materials were not denoted in them. The EPA also determined that it is practical and feasible for water systems to prepare the baseline inventory by the rule compliance date (three years after rule promulgation; see section IV.D.1.a of this preamble for more information).

The EPA also disagrees that including connectors in the inventory provides limited benefits to public health. Inventoried lead connectors can provide additional information to the public on potential sources of lead in drinking water, both from the lead connector itself and from lead that might have adsorbed onto galvanized service lines or premise plumbing that are currently or were previously downstream of the connector. Although lead connectors are expected to contribute less to lead in drinking water when compared to LSLs because they are shorter in length, lead connectors are still a source of lead that may contribute to lead in drinking water. Commenters did not provide information or data to support concluding that it is not feasible for systems to conduct a review of applicable sources for connectors and to track connectors during normal operations. Lastly, all connectors identified along a service line must be included in the inventory. The LCRR Inventory Guidance (USEPA, 2022c) provides recommendations on how to uniquely label service lines at the same address, which may be applied to a configuration of multiple connectors along the same service line and, therefore, the same address.

The EPA received comments on the proposed categories for connector materials in the baseline inventory. Commenters asked for the ''replaced lead'' category to be made optional due to the increase in workload to identify where lead connectors have been replaced in the past, to focus time and resources on higher priority inventory and replacement activities, the lack of clarity on the intent for including the category, and the potential for customer confusion due to the lack of clarity on what actions, if any, should be taken based on this information. One commenter stated that the category is inconsistent with categories for service lines, which do not keep track of where LSLs have been replaced. Another commenter stated that, if an entire service line has been replaced, there is no reason to ''alarm the public'' by noting the connectors that were previously made of lead. The same commenter was also confused as to why the categories did not mimic the service line categories more (*e.g.,* lead, galvanized, non-lead, or unknown). Other commenters found the distinction between certain categories to be unclear, noting an example of copper service lines falling under the ''never lead'' and ''no connector present'' categories because they do not have connectors, and asked for clarification on locations where there are no records available. One commenter stated all connector categorizations were unnecessary, whereas another commenter supported the connector categorizations as proposed.

The agency agrees with commenters who raised concerns about tracking replaced lead connectors when the entire service line has been replaced as well as the concerns about potential for customer confusion of the ''replaced lead'' category and what actions consumers should take, consistency with the service line material categories, and commenters' confusion on inventorying connectors based on the proposed rule categorizations. The categories for service lines did not include replaced LSLs or replaced GRR service lines, which was inconsistent with the categories for connectors that include replaced lead. Therefore, the agency is revising the final LCRI to remove the ''replaced lead'' and ''never lead'' connector material categories and add a new ''non-lead'' category. Water systems would categorize replaced lead connectors and never lead connectors as ''non-lead,'' and they would categorize sites where the lead connector was removed and no non-lead connector replaced it as ''no connector present.'' These finalized requirements simplify and streamline the proposed requirements by removing the separate category for replaced lead. The EPA encourages water systems include additional subcategories for non-lead connectors or sites with no connectors present, such as whether a lead connector was replaced at or removed

from the location. Locations of where lead connectors were previously replaced may provide the water system with additional information, particularly when investigating the cause of elevated lead under the DSSA requirements. This additional information could also be useful to consumers, such as if they have a downstream galvanized service line or downstream galvanized premise plumbing that might have adsorbed lead particulates released from the upstream lead connector. Additionally, water systems improving their water infrastructure by fully replacing old, galvanized service lines that are downstream of a known lead connector or replaced lead connector are eligible for BIL DWSRF LSLR capitalization grants to conduct these improvements (USEPA, 2022d). See section IV.D.1.c of this preamble for more information on the final LCRI requirements for connector material categorization.

ii. Inventory All Service Lines

Under the final LCRI, as proposed, all CWSs and non-transient non-community water systems (NTNCWSs) must update their LCRR initial inventories to create a baseline inventory of all service lines in the distribution system. No service line is to be excluded, regardless of water system size, system characteristics, service line ownership, actual or intended use of the service line, historical tap sampling results, or service line installation date. The inventory requirements include all service lines connected to the distribution system including service lines with no known potable applications, such as those designated for fire suppression or emergencies, as well as service lines connected to vacant or abandoned buildings even if the buildings are unoccupied and water service is turned off.

The EPA received comments stating that the agency should not require water systems to inventory service lines with non-potable applications (*i.e.,* fire suppression lines), service lines at abandoned properties, and service lines installed after lead bans became effective, such as Federal, State, or local bans. Commenters stated that fire suppression lines are typically larger than lead or GRR service lines and are used for non-potable purposes. One commenter stated that the limited resources available to water systems would be better directed towards activities with greater benefit to public health because inventorying fire suppression lines provides limited benefit to public health.

The EPA disagrees with commenters that suggested service lines with non-potable applications should be excluded from the inventory requirements. A requirement to inventory only those lines that are currently being used for potable purposes or may be used for potable purposes is administratively unworkable. Moreover, it could expose consumers to lead in drinking water from lead or GRR service lines because the water system is not aware of all actual uses of the water service by consumers, which could include potable uses, *e.g.,* industrial workers potentially drinking water at the facility or agricultural workers filling up water bottles from a close by tap that is primarily used for irrigation. Service lines, as defined by the rule, are used for the distribution of potable water; therefore, regardless of their current or intended use, they are capable of being used for potable purposes. The possibility that the potable water may in fact be used exclusively for non-potable applications at some point in time does not preclude the possibility that the potable water could in fact be used for human consumption or that these service lines could be repurposed in the future for potable uses. For example, these service lines may be repurposed for potable use during a natural disaster or other major emergency or may be repurposed for new residential use. Furthermore, the EPA is concerned that any exclusion of service lines to LCRI requirements based on anticipated or intended use could erroneously exclude some service lines from other LCRI requirements (*e.g.,* service line replacement, public education, and tap sampling). The final rule similarly does not exclude service lines connected to abandoned or vacant properties from the service line inventory because of the potential for these sites to be occupied by consumers in the future. An NPDWR provision that applies to only where the water is actually used for human consumption is administratively unworkable, difficult to implement, and would introduce unnecessary complexity into the rule, which would run counter to the EPA's commitment to simplifying the rule. By including all service lines in the inventory, water systems can avoid these potential harms to public health.

The EPA received comments stating that the agency should not require water systems to inventory service lines on private property. Commenters also asked whether water systems must inventory service lines downstream of a master meter (also called, ''mass meter'') or other single point of connection. Commenters stated that CWSs should not be responsible for inventorying and taking subsequent actions for what they characterize as distribution systems that are maintained by someone other than the water system and ''only connected to the water system by virtue of the sale of water through a mass meter.'' Commenters noted that the definition of a service line may create a responsibility for buildings on a college campus, manufactured housing communities, apartment complexes, etc., where the system does not have the authority, control, or responsibility beyond the connection point. Commenters suggested that the regulated system should not be burdened by these groups of connections beyond a master meter, which they implicitly assume are separate and/or unregulated PWSs.

The EPA disagrees with commenters that service lines on private property should not be inventoried. Therefore, the final rule, like the 2021 LCRR, requires water systems to include in their inventory all service lines that are connected to the distribution system, regardless of ownership. Because all service lines are connected to the PWS's distribution system, they are accessible at that juncture to the PWS in order to allow for identification. If the service line is connected to the distribution system, then the water system should be aware of its composition in order to comply with the requirements in the rule to provide public education to persons served by lead and GRR service lines and to replace these lines if they are under the control of the system. Under the 1991 LCR, systems have been able to identify service line materials even where the service lines traverse private property to comply with the tap sampling and service line replacement requirements, and water systems have been developing an inventory of all service lines connected to a distribution system, regardless of ownership, to comply with the 2021 LCRR.

In some situations, an apartment complex, manufactured housing community, or other multi-family or multi-unit entity will have a master meter at the property line of the community. If these communities are considered part of or within a CWS or NTNCWS service area, then that water system is required to inventory all service lines, even if they are beyond a master meter, just as the system is required to inventory service lines between a water main and a single-family residence regardless of the presence of a meter between the water main and the building inlet. As stated above, the inventory must include all service lines connected to the public

water distribution system. If the group of connections beyond a master meter meets the definition of a PWS (*i.e.,* serve at least 15 service connections or 25 persons for 60 days per year) and receives some or all of its finished water from one or more wholesale systems, it would meet the EPA's definition of consecutive system (§ 141.2, definition of ''consecutive system''). Consecutive systems that are CWSs or NTNCWSs must complete and submit the LCRR initial inventory to their State by October 16, 2024, and follow the requirements of the LCRI. Some of these systems may meet the criteria that allows a system to not comply with NPDWRs under SDWA section 1411 and § 141.3. The EPA encourages systems to contact their State for questions concerning the application of these criteria to a specific system.

iii. Methods To Categorize and Identify Service Lines

The EPA received comments on methods for service line material identification. Some commenters stated that water systems should be able to use the age of the service line and the effective date of the lead ban as well as statistical approaches (like interpolation and predictive modelling) to categorize a service line as non-lead. These and other commenters also stated that the EPA should prescribe acceptable methods for service line identification along the entire line and provide guidance on how to determine whether an emerging method is acceptable. One commenter stated that every service line should not need to be ''manually verified,'' and a different commenter stated that, if a utility has identified 10 percent of their service lines as non-lead, the rest of the service lines should be assumed to be non-lead. Another commenter stated that NTNCWSs should be allowed to use sampling as a preliminary assessment to determine the potential presence of LSLs before using more invasive investigative methods that may disrupt facility operations. Another commenter stated that unknown service line identification should be risk-based (*e.g.,* taking into account the probability an LSL exists and identifying unknown lines based on that probability).

The EPA disagrees that the agency should prescribe a list of acceptable methods for service line identification beyond the list of specified sources in the rule, which allows for the use of additional sources and new technologies developed in the future to aid in determining service line material if approved or required by the State. The EPA proposed to require systems to review certain specified sources described in § 141.84(b)(2)(i) through (iii). Water systems may use the age of the service line and the date of the applicable lead ban to categorize service lines because such records fall under the sources of information that systems must review as described in § 141.84(b)(2)(ii). Water systems may use any sources that are or previously have been approved or required by their States. While the EPA disagrees with commenters that the rule should prescribe a list of additional specific acceptable methods for identifying service line materials at the national level, the EPA notes that it has published the LCRR Inventory Guidance that discusses available methods that water systems could use with State approval (USEPA, 2022c). The agency has also published other guidance documents on developing and maintaining service line inventories including a general fact sheet, inventory template, and small entity compliance guidance (USEPA, 2023n; USEPA, 2023o).

The EPA disagrees that the inventory should include additional ''risk-based'' categorizations for unknown service lines (*e.g.,* likely lead versus unlikely lead). Water systems may choose to include this type of information, and the EPA notes that, in § 141.84(a)(3), the definition of a lead status unknown service line indicates that water systems can provide additional information regarding their unknown service lines as long as the inventory clearly distinguishes unknown lines from those where the categorization of the material is based on the applicable sources of information specified in § 141.84(b)(2) (*e.g.,* records, codes, inspections, and other documentation). There is nothing in the rule that would preclude systems from providing additional information in the inventory to describe the basis for the categorization or the likelihood that the service line is made of lead. For example, a system that adds subcategories, such as ''unknown—likely lead'' and ''unknown—not likely lead,'' may use that information to prioritize identifying service lines suspected or likely to be lead. The EPA agrees that the LCRI should not preclude the inclusion of this type of information, but the agency does not agree that all water systems should be required to include this level of categorization as it would add burden, make the rule more complex, and could take time and resources away from identifying unknown service lines.

iv. Lead-Lined Galvanized Service Lines

The EPA received comments about lead-lined galvanized service lines in the proposed rule. Commenters recommended that the EPA require water systems that identify lead-lined galvanized service lines in their distribution system to categorize all galvanized lines in those systems as lead-lined galvanized service lines and replace them. Because these pipes can be difficult to detect and verify, these commenters said all galvanized lines should be assumed to be lead to protect public health. One commenter stated that the EPA should require water systems to check for lead lining in galvanized service lines using specific technologies and to update the EPA's guidance on service line inventories to incorporate lessons learned from systems with lead-lined galvanized service lines.

The EPA agrees that lead-lined galvanized service lines can contribute significant amounts of lead in drinking water, and, as the agency previously stated in the 2021 LCRR Inventory Guidance and proposed LCRI, these service lines are covered by the definition of an LSL (USEPA, 2022c; USEPA, 2023a) because a portion of the service line is made of lead. Therefore, as clarified in the final LCRI, any lead-lined pipe is required to be categorized as an LSL in the inventory and is treated as an LSL for all other requirements in the rule, such as mandatory service line replacement, public education, tap sample tiering, and risk mitigation.

The EPA disagrees with the suggestion that water systems should be required to categorize all galvanized service lines in the system as LSLs if there is at least one lead-lined galvanized service line in the distribution system. During the proposal and development of the final rule, the EPA conducted a web search and found limited information about the existence or past installation of lead-lined galvanized service lines in about 30 communities in varying amounts, where the majority of these communities are in the State of Massachusetts (City of Rochester, n.d.; Klemick et al., 2024; MWRA, 2023; Sedimentary Ores, n.d.). The information collected provided no data about the prevalence of lead-lined galvanized service lines nationwide or whether these lines, some of which were installed over a century ago, have already been replaced. Additionally, commenters did not provide data to support the assumption that, if one lead-lined galvanized service line is found, then all galvanized lines in the system are lined with lead. Because the EPA

could not find nor was the agency provided with significant data on the prevalence of lead-lined galvanized service lines nationwide, the agency does not agree with requiring that all galvanized service lines be designated as lined with lead based on the presence of one or a small number of galvanized lines lined with lead in a system. States or localities may use information specific to their region to better inform this type of assumption. To address the possibility that systems may have (or find in the future) lead-lined galvanized service lines, the EPA is finalizing a new requirement for systems that identify any lead-lined galvanized service lines to include in their service line replacement plan a strategy to determine the extent of the use of lead-lined galvanized service lines in the distribution system (see section IV.C of this preamble). Water systems can check GRR service lines currently or previously downstream of LSLs to evaluate whether they are lined with lead when they are replaced under the mandatory service line replacement program. The average service life of cast iron and ductile iron pipe is 40 years (Florida Department of State, 2010), and any lead-lined galvanized service lines are expected to be approximately a minimum of 40 years old by the LCRI compliance date in late 2027 because installation of new lead-lined galvanized lines would have been prohibited under section 1417 of SDWA, given the Federal lead ban that was enacted in June 1986 and enforced through State and local plumbing codes no later than June 1988. Additionally, as water systems replace old, galvanized service lines (in addition to replacing GRR service lines during mandatory replacement) over time and improve their water infrastructure to reduce water loss, respond to service line breaks, remediate low water pressure to buildings, and increase efficiency across the system, they will have opportunities to check whether any galvanized service lines are lined with lead and remove them from their distribution system.

c. Final Rule Requirements

For the final LCRI, all water systems are required to develop a baseline inventory that includes the material of each service line and identified connector that is connected to the public water distribution system regardless of ownership status and intended use. Water systems must develop the baseline inventory by the LCRI compliance date in § 141.80(a) by updating the LCRR initial service line inventory with any new information on service line materials from the applicable sources described in § 141.84(b)(2) and information on connector materials identified through a review of specified sources. Systems are required to review specified sources of information, such as construction and plumbing codes, permits, and records, that describe connector material and locations; and systems may use other sources of information not listed if approved or required by the State. The system may categorize a service line or connector as non-lead where the service line is determined through an evidence-based record, method, or technique to not be a lead or GRR service line. The final LCRI includes a definition of newly regulated PWSs in § 141.2, where these systems are required to develop a baseline inventory on a schedule established by the State that does not exceed three years from the date the system is subject to NPDWRs (see section IV.O.3 of this preamble).

For the final LCRI, water systems must conduct a review of specified sources on connector materials and include information on connector materials in their service line inventories. Water systems must identify connector materials as they are encountered during normal operations and update the inventory to include the newly encountered connector. Connector materials must be categorized in the inventory as either lead, non-lead, unknown, or no connector present. The lead category is for connectors made of lead. The unknown category is for connectors that are identified through an available source, but the material of the connector is not known or documented in the source. Systems are not required to document connector materials and locations where the system's review of specified sources and lack of encounters during normal operations have not revealed whether there is or is not a known connector at the location. The non-lead category is for connectors that are determined through an evidence-based record, method, or technique not to be made of lead. Water systems may include additional information such as the specific material of a non-lead connector (e.g., copper or galvanized) as an alternative to categorizing it as ''non-lead.'' Water systems may also provide more information regarding their non-lead connectors, such as whether a lead connector was replaced at the location. Lastly, the ''no connector present'' category is for where there is no connector at the location, such as locations where the connector was removed or locations where there never was a connector, *e.g.,* in instances where the service line directly connects a water main to a building inlet.

2. Inventory Updates and Discrepancies

a. Rationale and Proposed LCRI Requirements

For the LCRI, the EPA proposed that water systems update the inventory annually. Under the 2021 LCRR, systems are required to update the inventory and submit it to the State on the same frequency as the system's tap sampling and monitoring schedule, but no more frequently than annually. Decoupling the inventory update submissions from the tap sampling and monitoring schedule was proposed to: (1) Ensure the system is providing up-to-date information to consumers on an annual basis and (2) enhance compliance with the mandatory service line replacement requirements, which are assessed annually, and annual public education requirements. Annual inventory updates also increase transparency for consumers and States relative to the 2021 LCRR, which allowed inventory updates every three years. Consistency between annual updates and other LCRI requirements would reduce discrepancies between the information, *i.e.,* the service line material in the inventory may not match the material provided in the consumer notification if the inventory is not updated annually. For example, water systems would need to update their inventories over time because service line material categorizations may change as service line materials are identified over time through normal operations, targeted investigations of unknown service lines, and service line replacements.

For the LCRI, the EPA also proposed that water systems include the total number of lead, GRR, and unknown service lines, the number of lead connectors in the inventory, and the number of full lead and GRR service line replacements completed with each inventory update submitted to the State and to make them available in the publicly accessible inventories to improve transparency and customer tracking of inventory and service line replacement progress. This information is also important for compliance and enforcement of the mandatory service line replacement requirements and for the EPA's administration of financial assistance programs.

The EPA proposed to expand the 2021 LCRR requirement for a water system to update their inventory by the next submission deadline if a system, including a system whose inventory previously consisted solely of non-lead

service lines, discovers a lead or GRR service line. The agency proposed to require systems to add the discovered lead or GRR service line to the replacement pool for the mandatory service line replacement program. The agency also proposed to require systems to replace the service line within six months of discovery if the system's inventory only contained non-lead lines, such as after the system finished mandatory service line replacement. Systems must then comply with any additional actions required by the State. This requirement ensures that systems update the inventory with the newly discovered lead or GRR service line and replace the line accordingly.

Additionally, the EPA proposed to require water systems to respond to consumer inquiries of a suspected incorrect categorization of their service line material in the inventory with an offer to inspect the service line within 60 days of receiving the notification. The EPA explained that this would provide another opportunity for the system to assess the accuracy of its inventory to inform potential actions to remedy discrepancies at the individual site and throughout the distribution system more broadly (88 FR 84935, USEPA, 2023a). For example, if a consumer previously replaced a service line that is still listed as lead or GRR based on a historical record, the system can correctly recategorize that service line material.

b. Summary of Public Comments and the EPA's Response

The majority of commenters supported the proposed requirement for inventories to be updated and submitted to the State annually. Some commenters stated that submission of annual updates to the State would be too frequent and burdensome, especially for smaller systems with few staff. One commenter requested that inventories be updated ''as needed'' as replacement programs progress.

The EPA disagrees with commenters that it is unnecessarily burdensome for systems to submit updated inventories to the State on an annual basis and make them available to the public no later than the deadline for the State submission. Annual inventory updates increase transparency for consumers and States and are essential to comply with the annual consumer notification and mandatory service line replacement requirements. Water systems will need to update their inventories over time as service line material categorizations change as a result of replacement and validation and as the materials of unknown service lines are identified. The EPA expects water systems to update their inventories in real time or regularly throughout the year as new data becomes available, which will lessen the burden with preparing, submitting to the State, and publishing the updated inventory for the public. Annual submission to the State of updated inventories will allow systems time to compile the updated information while assisting States in ensuring compliance with requirements, including public education and service line replacement. Water systems are subject to several annual reporting requirements in NPDWRs and have demonstrated the ability to prepare annual reports.

The EPA received comments on the content of the inventory updates. One commenter stated that, to simplify inventory updates, systems with online inventories should only have to notify their States annually with summary information of any updates and provide them with instructions on how to access the online inventories. The commenter noted that it would be unnecessary to annually re-submit an online inventory to the State. Another commenter advocated including additional information in the summary of information provided with each update, such as the number of partial LSLRs conducted. Some commenters also stated that the updated inventories should include the number of abandoned or disconnected LSLs and lead connectors left in the ground because they are concerned abandoned sections of lead pipe in the ground may later contribute to soil and ground water contamination.

The EPA agrees that systems should be able to provide States with summary information and instructions on how to access online inventories in lieu of submitting the entire inventory because, together, the summary information and instructions to the online inventory are effectively the same as submitting full documentation for the updated inventory as described in § 141.84(b); they fulfill the same purpose of ensuring State and public access to the most up-to-date inventory information on at least an annual basis. Therefore, the EPA is revising the final LCRI to allow water systems that make the publicly accessible inventory and its subsequent updates available online (*e.g.,* an online map or downloadable file on a website) the flexibility to provide instructions on how to access the updated inventory information instead of preparing a fixed copy of the entire updated inventory (which includes the summary information), submitting it to the State, and making it available to the public on an annual basis. These systems will only need to provide the summary information regarding service line material identification and replacement as specified in § 141.84(b)(2)(iv) and instructions on how to access the updated inventory to their States. Systems that utilize this flexibility must ensure the required summary information is publicly available online (*e.g.,* listed on the same web page as the online map) to fulfill the inventory updates requirement. A State may also request their water systems who take advantage of this option to provide them with an indication of where changes have occurred since the previous submitted inventory because this would allow States to focus on where changes were made.

The EPA agrees with commenters requesting additional items in the list of summary information to be included and submitted with the inventory. As a result, the EPA is revising the proposed list of information water systems must include with each updated inventory to also contain the total number of each of the following: non-lead service lines in the inventory, connectors of unknown material in the inventory, and the number of partial lead and GRR service line replacements that have been conducted in each preceding program year. This provides consumers with additional information to understand their public water distribution system and the potential risks of lead exposure in their drinking water. By including the number of partial service line replacements conducted each year, the State and consumers can more easily monitor the system's compliance with service line replacement requirements. The EPA recommends that systems include the number of lead service lines and connectors that remain in the ground after ''abandon-in-place'' or ''pipe splitting'' practices are used to replace these pipes; however, this information is not required to be included in the inventory or service line replacement plan. Tracking information on these lead materials would ensure that this locational information exists should the system or the public need such information in the future. However, once the service line is cut, it is not a part of the water service (see code 9.14 in the LCRI Response to Comments document for more information, USEPA, 2024k).

The EPA received comments on the proposed requirement that water systems must offer to inspect a service line that a consumer suspects is incorrectly categorized. Commenters stated that the EPA should allow systems to provide available

documentation on why a service line is categorized as such and allow follow-up actions (*e.g.,* phone calls, emails, and submitted photos) with the consumer to determine if visually inspecting the service line is necessary. One commenter stated that systems should be allowed a longer period to inspect service lines where the material is unknown. Another commenter stated that systems should inspect the service line within 60 days rather than only offering the inspection within 60 days.

The EPA agrees that there are several effective ways for a water system to respond to a customer request for inspection besides on-site visual inspection. The EPA is not specifying the timeframe for which water systems would need to conduct the inspection, recognizing (1) the actions that are most appropriate can vary across systems (*e.g.,* on-site visual inspection of the pipe exterior; virtual inspection such as a photo or video submission from the consumer or a video call with the consumer) and (2) the system-specific conditions, such as freezing ground conditions in some climates, can impact when certain types of inspections can be conducted. A visual inspection of the pipe conducted remotely can be as effective as an on-site inspection and will reduce the burden on a system to respond to consumer notifications of suspected incorrect categorizations of service line materials. The EPA did not propose to require water systems to offer to inspect and follow through with the inspection within 60 days and has clarified that rule text accordingly. Additionally, the agency is revising the final rule to require systems to offer inspection within 30 days of receiving the notification from the consumer or the customer (if different from the person served at that service connection). The 30-day period to offer to inspect is required to ensure timely follow-up with the consumer or customer has occurred.

c. Final Rule Requirements

The final LCRI retains the proposed requirement for water systems to continue to update their service line inventories until their inventories contain only non-lead service lines, non-lead connectors, or no connectors present. Systems with lead, GRR, or unknown service lines, lead connectors, or connectors of unknown material must submit the inventory updates to the State annually and make the update available to the public no later than the deadline for submitting it to the State. Systems must update the inventories based on the sources of information specified in the rule, other sources of information approved or required by their States, their mandatory service line replacement programs, and encounters during normal operations.

Inventories must be updated with information from any encounters with service line or connector materials, service line inspections, and replacements that have occurred since the previous update. Systems must also report summary information that includes the total number of service lines for each service line material category (lead, GRR, unknown, and non-lead), the total number of lead connectors, and the total number of connectors of unknown material as well as the number of full lead and GRR service line replacements and the number of partial lead and GRR service line replacements that have been conducted in each preceding program year. A water system that makes the publicly accessible inventory and its subsequent updates available online (*e.g.,* online map or downloadable file on a website) has the option to submit to the State the summary information regarding service line material identification and replacement as specified in § 141.84(b)(2)(iv) and instructions on how to access the updated inventory in lieu of providing a fixed copy of the entire updated inventory that includes the required summary information. A system that uses this option must ensure the summary information is publicly available online.

All water systems that discover a lead or GRR service line that was previously inventoried as non-lead must update their inventories, notify the State in accordance with the reporting requirements, and comply with any additional actions required by the State to address the inventory inaccuracy. The final LCRI requirements to replace the discovered lead or GRR service lines have been moved to § 141.84(d)(4)(ii) and are discussed in section IV.B.7.c of this preamble.

If a consumer or customer (if different from the person served at that service connection) notifies the water system of a suspected incorrect categorization of their service line material in the inventory, the system must respond to the consumer or customer within 30 days of receiving the notification to make an offer to inspect the service line.

3. Public Accessibility of the Inventory and the Inclusion of Addresses in the Publicly Accessible Inventory

a. Rationale and Proposed LCRI Requirements

Publicly accessible inventories can facilitate community engagement and improve transparency. These inventories inform the public of the location of possible lead exposures and provide transparency to the State and the public of system progress on service line identification and replacement. In turn, publicly accessible inventories can help protect public health by making this information broadly available. For the LCRI, the EPA built upon the 2021 LCRR's publicly accessible inventory requirements by proposing that water systems make not only service line materials accessible to the public, but also connector materials and the street address of each identified service line and connector.

The proposed LCRI retained the 2021 LCRR requirement for systems serving greater than 50,000 persons to make the publicly accessible inventory available online. This threshold was set in the 2021 LCRR because of the potential burden associated with digitizing and hosting the inventory online for smaller systems (USEPA, 2020e). It is feasible for large systems to host their inventories online (USEPA, 2020e). In the proposed LCRI, the EPA sought comment on changing the threshold.

The 2021 LCRR requires water systems to create and maintain an inventory that includes the specific addresses associated with each service line connected to the water system, but the 2021 LCRR does not require the publicly accessible inventory to include the specific addresses of lead or GRR service lines; instead, water systems are permitted to use a ''location identifier,'' which could be a street address, block, intersection, or landmark. For the LCRI, the EPA proposed to require water systems to include a street address associated with each service line and connector in the publicly accessible inventory; where a street address is not available for an individual service line or connector, the EPA proposed that systems use a unique locational identifier. The EPA proposed this requirement to increase transparency with their consumers about the locations and materials of service lines and connectors connected to their residences or other buildings they may occupy (*e.g.,* places of employment and child care facilities). This ensures that all persons served by a lead, GRR, or unknown service line have access to this information, not just those

consumers who received targeted public education from the system. As stated in the proposal, including addresses in the publicly accessible inventory is critical to make more people aware of their risk to lead in drinking water because the requirements for notification may not be sufficient to reach all persons at or who use that site (*e.g.* where the persons served are short-term residents in non-owner occupied buildings, parents and guardians of children at in-home child care facilities, and residents of long-term care facilities). Additionally, it is feasible for systems to make publicly accessible the specific addresses where connectors and lead, GRR, unknown, and non-lead service lines are located, as demonstrated by the fact that several systems are already publishing service line inventories containing addresses (88 FR 84936, USEPA, 2023a).

b. Summary of Public Comments and the EPA's Response

The EPA received comments supporting and opposing the proposed requirement to include street addresses in the publicly accessible inventory. Some commenters supported the proposed requirement because it provides transparency, builds accountability and trust with the public, makes people aware of their risk of lead in drinking water, and, if searchable by address, can provide information to prospective buyers and renters and create an incentive for property owners to provide consent for full service line replacement.

Some commenters opposed the inclusion of specific addresses in the publicly accessible inventory for a range of reasons. Some commenters noted that sites, such as those in very rural areas, with water service may not have street addresses and, instead, water systems typically have Global Positioning System (GPS) coordinates for those properties. Some commenters suggested addresses are unnecessary because consumers served by lead, GRR, and unknown service lines will receive an annual notification of service line material. Some commenters questioned the EPA's authority for the requirement and expressed concerns, without explanation, about potential liability and complications due to privacy laws. Some commenters suggested that the requirement would discourage property owners from providing consent to identify service line material using field investigation methods like potholing and act as a disincentive for water systems serving less than 50,000 persons from posting their inventory online.

The EPA agrees that, in some cases, a site may not have a street address. In these cases, the final rule allows water systems to assign a non-address locational identifier (*e.g.,* a block, intersection, or landmark) to a service line or connector. The final rule adds GPS coordinates as a potential example of a non-address locational identifier that can be used in circumstances where a street address does not exist.

The EPA disagrees with commenters that the agency has no need or clear authority to require addresses be included in the publicly accessible inventory. This provision is authorized under SDWA section 1412(b)(7)(A) because, as explained below, it prevents known or anticipated adverse effects on the health of persons. In addition, SDWA section 1417(a)(2) requires ''[e]ach owner or operator of a public water system'' to ''identify and provide notice to persons that may be affected by lead contamination of their drinking water where such contamination results from [. . .] the lead content in the construction materials of the public water distribution system.'' A publicly accessible inventory with street addresses ensures that all persons served by a lead, GRR, or unknown line have access to this information, not just those consumers who received targeted public education from the system. The requirements for notification (such as the requirements for annual notification of known or potential lead service line material) may not be sufficient to reach all persons at or who consume water at that site, such as where the persons served are short-term residents and visitors, parents and guardians at child care facilities, residents of long-term care facilities, and employees. The inclusion of addresses in the publicly accessible inventories also strengthens public health protection by incentivizing property owners to identify and replace service lines.

In light of the public health benefit of this requirement, the EPA does not agree that the rule should not require the use of street addresses in the publicly accessible inventory due to the perceived concerns that water systems could face potential liability for the public disclosure of this information. No commenters provided any detail to explain the basis for their concerns about potential liability. Many water systems across the nation have published or made publicly available inventories that include street addresses, such as the City of Columbus Department of Public Utilities, OH; the City of Grand Forks, ND; the City of Lincoln, NE; the City of Somerville, MA; the City of Troy Department of Public Utilities, NY; the City of Wheaton Water Division, IL; DC Water, DC; Marshfield Utilities, WI; Pittsburgh Water and Sewer Authority, PA; and Saint Paul Regional Water Services, MN. All systems in New Jersey are required to include the locations of all service lines in their inventories, and systems serving 3,300 persons or more are required to host their inventories on their websites (State of New Jersey, 2021b). Additionally, the Rhode Island State Department of Health plans to publish and maintain an online map of the specific location of each service line and identify whether it is a lead or unknown service line (State of Rhode Island, 2023b).

The EPA received comments on the threshold to make a publicly accessible inventory available online. Commenters stated that the EPA should maintain the threshold at systems serving more than 50,000 persons because smaller systems are less likely to have the resources to comply with the requirement, implementation of the various NPDWRs would be easier and more streamlined if the thresholds for making information available online were more aligned across NPDWRs, and the uncertainty about whether the requirement would be feasible for medium systems. One commenter stated that that the EPA should not revisit the threshold but should instead incentivize online posting of the inventory by eliminating detailed data submissions to the State for all systems that meet the following requirements: post the inventory online, update the online inventory with new information as required by the rule, and provide the inventory website to the State. Conversely, other commenters stated that the threshold should be either lowered to include medium systems (systems serving more than 10,000 persons) or the threshold should be eliminated, requiring all water systems to make the inventory publicly available online. Commenters stated several reasons for lowering the threshold, such as: (1) The lack of readily accessible information about water systems can be a barrier to participation in the replacement program, trust in the system, and successful prevention of the risk of lead exposure from drinking water for homeowners and tenants; (2) more water systems are capable of posting their inventories online; and (3) sharing critical information appropriately is one of the most important and least expensive tools for public health protection, public transparency, and public education. One commenter representing a State noted that a

threshold of 10,000 persons could be feasible if inventories can be made available online via an online file sharing services instead of a website. Another commenter representing a State noted that their experience shows that systems serving more than 10,000 persons have the resources and capacity to make their inventories available on the municipal or water system website. One commenter stated that States should be authorized to post the inventories on their own website for individual water systems and serve as a central database, where systems would only have to post an external link to the State's website on their websites for consumers to easily access.

The EPA agrees that publicly accessible information about inventories is important to all consumers as provided by the LCRI public education requirements. However, as discussed below, the EPA disagrees that the threshold for requiring the inventory be available online should be lowered from 50,000 persons served and, therefore, the EPA is retaining the threshold of systems serving more than 50,000 persons in the final LCRI. When developing the final LCRR, the EPA determined that this threshold is feasible for larger systems as mentioned in section IV.D.3.a of this preamble. This threshold also is consistent with other requirements, including the CCR requirements. The EPA selected this threshold because it is feasible for systems serving over 50,000 persons to publish the inventory online (USEPA, 2020e). For systems serving 50,000 persons or fewer, however, the potential burden associated with digitizing and hosting the inventory online is greater and would likely take resources away from developing the inventory, identifying unknown service lines, and conducting lead and GRR service line replacement. As stated above, systems serving 50,000 persons or fewer are given the flexibility to choose how they make their inventories accessible to the public. The EPA anticipates that systems serving 50,000 persons or fewer that have the ability may choose to host their inventories online as this would ease their inventory submission burden to the State as well as provide a convenient way for their customers and consumers to access the inventory. Additionally, States may set a lower threshold if they choose.

However, the EPA agrees with the suggested incentive for systems that post their inventories online, and, as discussed in section IV.D.2 of this preamble, the final LCRI provides water systems that make their inventory and its subsequent updates available online (*e.g.,* an online map or downloadable file on a website) along with the summary information regarding service line material identification and replacement as specified in § 141.84(b)(2)(iv) the option to provide instructions to access to the online inventory and the summary information to the State in lieu of providing a fixed copy of the entire inventory as described in § 141.84(b). Additionally, the EPA notes that inventories can be made available online via online file sharing services. The LCRR Inventory Guidance states that, for systems that may not have the capacity for online GIS mapping applications, there are other online data sharing methods that better fit the needs of these systems and their consumers, such as through an online cloud-based data sharing, online spreadsheet, file transfer protocol (FTP) server, or a downloadable format linked to text or an image on the system's website (USEPA, 2022c). Furthermore, the EPA agrees that States and their systems may take this approach to publishing the baseline inventories and subsequent updates to the inventory online and satisfy this part of the requirements; however, systems will still need to annually report the information regarding service line material inspections and replacements to their States.

c. Final Rule Requirements

The final LCRI requires water systems to make their service line inventories publicly accessible. The publicly accessible inventory must include the material and street address of each service line and identified connector in the service line inventory. Where a street address is not available for an individual service line or connector, a unique locational identifier (*e.g.,* block, GPS coordinates, intersection, or landmark) may be used instead. The publicly accessible inventory must reflect any updates to the inventory no later than the deadline to submit the updated inventory to the State, including the listed information regarding service line material identification and replacement that has occurred since the previous update. Water systems serving greater than 50,000 persons must make the publicly accessible inventory available online.

When a water system has no lead, GRR, or unknown service lines and no known lead connectors or connectors of unknown material in their distribution system, the system may use a written statement in lieu of a publicly accessible inventory. The written statement must include a general description of all applicable sources used in the inventory to determine that the distribution system does not have any lead, GRR, or unknown service lines, known lead connectors, and connectors of unknown material. Water systems, including those with publicly accessible inventories consisting only of a written statement, must include instructions to access the publicly accessible inventory in their CCRs.

4. Inventory Validation

a. Rationale and Proposed LCRI Requirements

Accurate service line inventories are essential to ensure replacement of all lead and GRR service lines. The EPA heard, through stakeholder engagement, concern for accuracy in inventories. To increase the accuracy of service line inventories, the EPA proposed that water systems must validate a subset of the non-lead service lines in their inventory. The proposed validation requirement would test the reliability of certain methods, techniques, and alternative sources of information used to identify service lines as non-lead and facilitate action to remedy any discrepancies that may be discovered as a result of the validation as well as provide systems, States, and consumers with additional confidence in the accuracy of the inventory. The EPA proposed to require the inclusion of all non-lead service lines in the validation pool unless the service lines were identified through the specified sources listed in § 141.84(b)(2)(i) through (iii) such as construction and plumbing codes and water system records, visual inspection of the pipe exterior at a minimum of two points, or previously replaced lead or GRR service lines. The EPA proposed to require water systems to confirm the service line material of a random sample of non-lead service lines from the validation pool using a visual inspection of pipe exterior at a minimum of two points and provide the validation results to the State. Under the proposal, systems would be required to validate the number of service lines necessary to achieve a 95 percent confidence level. For more information on the methodology used to determine the minimum number of validations required based on a system's validation pool, see the ''Technical Support Document for the Proposed LCRI'' (USEPA, 2023k). The EPA proposed to require systems to complete the validation by year 7 of a 10-year replacement program to allow time for the system to address potential issues identified in the validation process and complete replacement by the deadline. For systems subject to a deferred

deadline for service line replacement, the State would be required to set a deadline no later than three years prior to the deadline for replacement.

b. Summary of Public Comments and the EPA's Response

Some commenters support including a validation requirement in the LCRI to ensure inventory accuracy, enhance the effectiveness of the service line replacement plans (*e.g.,* inform the methods used to identify service lines of unknown or unconfirmed material), build trust, and help ease concern over using State-approved methods like predictive modelling and emerging identification technologies. Conversely, other commenters oppose a validation requirement because it diverts time and resources from service line replacement and is unnecessary because they assert that systems using predictive modelling (if approved by the State) already complete some form of validation process for their models. One commenter suggested that the rule require water systems to validate their inventories only after any inaccuracies are found, and another commenter suggested the rule allow systems to either visually verify the material of all service lines in 10 years or complete the proposed validation requirement by the 7-year deadline. Some commenters suggested that the rule waive, or allow a State to waive, the validation requirements if the water system completed an inventory validation prior to the promulgation of the LCRI.

The EPA agrees with the commenters that support the inventory validation requirements for the reasons mentioned: ensuring inventory accuracy, enhancing the effectiveness of the service line replacement plans (*e.g.,* inform the methods used to identify service lines of unknown or unconfirmed material), building trust with the public, and increasing confidence in the reliability of State-approved methods like predictive modelling and emerging identification technologies. The validation process does not divert time and resources from the service line replacement requirements but rather supports the effective implementation of the service line replacement requirements. Inventory validation increases the confidence of consumers, systems, States, and the EPA that the methods used to categorize non-lead service lines in the inventory are accurate and that systems are truly replacing all lead and GRR service lines in their distribution system. In addition, the deadline for validation provides systems with ample time to complete the validation process and will allow systems to combine validation efforts with normal operations and service line replacement activities to increase efficiency of validation.

The agency also acknowledges the concern for water systems that have already completed inventory validations, including systems that conducted previous validation efforts to develop and train predictive models. Therefore, the EPA is finalizing a flexibility for systems to be able to make a written request to the State to approve a waiver of the inventory validation requirements if the system completed validation efforts prior to the compliance date that are at least as stringent as the LCRI requirements.

In the proposed LCRI, the EPA requested comment on its proposed methodology to calculate the minimum number of validations systems would be required to perform. The EPA's proposed methodology set the size of the validation pool to achieve a 95 percent confidence level or, for systems with relatively few of these service lines, to validate 20 percent of the non-lead service lines in their validation pools. Some commenters supported the methodology and stated that the approach is reasonable. One commenter recommended that the EPA increase the number of validations required for larger systems. On the other hand, some commenters questioned why the EPA maintained an expected sample proportion of 0.5 even though it provides the most conservative number of validations required and why the agency does not allow each water system's ''consultant'' to develop a testing program that achieves a 95 percent confidence level at a sample proportion catered to each system. The same commenters stated that the EPA should clarify the validation calculations, *e.g.,* the data used to determine the expected sample proportion, the relevant comparison between the number of validations required and the validation pool, and where the EPA derived its formulas for determining the number of validations required.

The EPA used a conservative sample proportion of 0.5 because the agency does not have sufficient data to estimate a sample proportion specific to discovering a non-lead service line as a lead or GRR service line and, therefore, used 0.5 to ensure the minimum number of validations required is statistically significant in all systems nationwide regardless of the possibility for a more precise sample proportion at an individual system's level. A sample proportion of 0.5 is used when a better estimate is unavailable (Daniel and Cross, 2013). The EPA disagrees that water systems or their designated consultants should be required to conduct a testing program or pilot study to estimate the sample proportion prior to conducting inventory validation because conducting a testing program or pilot study would be resource intensive and add burden to systems. The validation requirements ensure systems do not need to do that by setting a procedure at the national level.

The EPA derived the equations to calculate the minimum number of validations required from the formulas used to assess the distribution of the sample mean when sampling without replacement by using the finite population correction factor (Daniel and Cross, 2013). The minimum number of validations required is the sample size of a finite population when sampling without replacement, and the validation pool is the assumed finite population size. See the ''Technical Support Document for the Final Lead and Copper Rule Improvements'' (final TSD) for an expanded derivation of the minimum number of validations required for a system's validation pool of non-lead service lines (USEPA, 2024d).

In the proposed LCRI, the EPA requested public comment on whether non-lead service lines that were categorized based on records should be subject to the validation requirements. Some commenters encouraged the EPA to include non-lead service lines categorized based on historical records in the validation pool. For example, one commenter recommended that the agency require service lines categorized based on records unless the records show the lines were installed, inspected, or replaced after the effective date of a local lead ban. Another commenter suggested requiring a random sampling of historical records because the initial inventory requirements in the 2021 LCRR did not require systems to identify the specific source used to categorize service lines. Other commenters were concerned that the reliability of historical records may vary across systems and provided examples of systems having inaccurate records. For example, one commenter mentioned that, in Flint, Michigan, inspections during a service line replacement project revealed that 24 percent of the service lines identified as copper based on historical records were actually made of lead (372 out of 1,489 service lines; BlueConduit, 2020). Commenters provided the example of the Lead Free DC task force, where the task force found that 20 percent of service lines identified as copper

through historical records were actually made of lead (Betanzo and Attal, 2022). A commenter representing a State also noted that some systems within their jurisdiction have found that historical records have been inaccurate.

In addition to these examples of inaccurate historical records raised by commenters, the EPA is aware of other data showing that historical records can be unreliable sources of information for service line material categorization. As the EPA noted in the LCRR Inventory Guidance, only 63 percent of the Pittsburgh Water and Sewer Authority's historical records were accurate because of the service line repair and maintenance activities that have taken place since the records were created (USEPA, 2022c). In addition, a 2023 study on the accuracy of service line identification methods found that, of the 159 control homes, records for 90 percent of the 99 known LSL sites were accurate, whereas records for 3 percent of the 60 non-lead service line sites accurately identified the service line material (Smart et al., 2023). Therefore, the EPA is revising the final LCRI to require the validation pool to include records of non-lead service lines. The EPA agrees, however, that records showing that the service line was installed after the effective date that the Federal, State, or local lead ban in the validation pool would have been enforced (June 19, 1988, if there was no enforcement of a State or local lead ban prior to that date) would be more reliable because these regulatory changes marked a change in system and plumbing practices nationally, where previous studies show instances of inaccurate records prior to these regulatory dates.

The EPA received comments on the proposed 7-year deadline for water systems to complete inventory validation when the system is subjected to a 10-year mandatory service line replacement deadline or only has non-lead service lines in their inventory. Some commenters supported the proposed deadline because it would allow systems three years before the deadline for service line replacement to implement changes if inaccuracies are found. Conversely, other commenters questioned whether requiring inventory validation efforts to be conducted within the first seven years is the best use of water system resources, instead recommending that validation be completed after (1) all unknown service lines have been identified to be representative of all non-lead service lines that could be included in the validation pool or (2) all known lead and GRR service lines are removed, so water systems can focus on lead and GRR service line replacement. Another commenter stated that the EPA should require inventory validation to be completed within the first three years of rule promulgation, or no later than halfway through the mandatory service line replacement timeline if extra time has been granted, because the proposed deadline is ''far too late.''

The EPA agrees with the commenters that supported the seven-year deadline because the deadline allows systems three years to address potential discrepancies found by the validation. The agency proposed a seven-year deadline to allow water systems to focus on identifying unknown service lines as well as validate service lines identified during the replacement program using field investigation techniques and alternative sources of information approved by the State. The EPA disagrees with the commenters that questioned whether the inventory validation requirement would be representative of all potential non-lead service lines to be added to the validation pool if validation is completed before water systems identify all unknown service lines. If a system complies with the inventory validation process sometime before seven years into the replacement program, it is expected to be reliable because the sources of information the system would be using are expected to be the same in the beginning years of inventory development to the end, especially if the validation results provide further confidence in the use of those sources, unless the system is approved or required by the State to use another source or method of identification. In that instance, if a system discovers a lead or GRR service line where a non-lead line was inventoried, the system is required to notify the State with the methods used to categorize the service line material and comply with any additional actions required by the State to address the inventory inaccuracy. Conducting inventory validation before the deadline for mandatory service line replacement allows the system time to investigate certain methods used to categorize non-lead service lines if discrepancies are found during the validation process before they complete replacement.

The EPA received comments on the proposed rule's requirements to address discrepancies found during the validation process. Some commenters advocated for requirements for water systems to take actions to increase the accuracy of their inventories if they identify discrepancies during the validation process because failure to include concrete steps to improve inventories could undermine the trust and reliability of the document that is the ''backbone'' of LCRI compliance (BlueConduit, 2024; Office of the People's Counsel for the District of Columbia (OPC–DC), 2024). One commenter recommended that water systems that inaccurately identify lead or GRR service lines as non-lead should be required to submit a plan to their States about how they will increase the accuracy of their inventories.

The EPA agrees that, when inventory discrepancies are identified during the validation process, remedial actions can improve the inventory's accuracy. The final LCRI requires water systems to submit to the State a list of the locations of any non-lead service lines identified to be a lead or GRR service line through the validation along with the methods used to categorize those service lines. The final LCRI also requires systems to comply with any additional actions required by the State to address the inventory inaccuracies found during the validation process. Given the range of possible reasons for inventory inaccuracies, the EPA expects States to be better suited to identify the appropriate actions systems must take to improve the accuracy of their inventories. A single, prescribed approach in a national rule could be overly broad and unnecessary if, for example, there is only one misidentified line, or inadequate to remedy the problem if the validation shows widespread inaccuracies of categorizations. Moreover, it would not adequately capture the broad range of potential responses that could improve inventory accuracy. Instead, the appropriate remedy is best identified on a system-specified basis tailored to the system's specific inventory inaccuracies and potential systemwide issues discovered during inventory validation.

c. Final Rule Requirements

In the final LCRI, the EPA made clarifying revisions to ensure the requirements are clear based on comments received. Under § 141.84(b)(5) of the final rule, water systems must validate the accuracy of the methods used to categorize service lines as non-lead. First, water systems must identify a ''validation pool'' of service lines that were determined to be non-lead through specific sources and exclude service lines determined to be non-lead through: (1) Records showing the service line was installed after the effective date of the Federal lead ban (June 19, 1988), or after the compliance date of a State or local law prohibiting the use of service lines that do not meet

the 1986 definition of lead free in accordance with SDWA section 1417, whichever is earlier, (2) visual inspection of the pipe exterior at a minimum of two points, or (3) previously replaced lead or GRR service lines. Previous visual inspections of the pipe exterior must consist of an inspection of at least two points. Previous lead or GRR service line replacements may also be excluded when identified during their review of specified sources. The EPA compiled a list of the lead ban provisions by State in appendix D of the LCRR Inventory Guidance (USEPA, 2022c); however, water systems should verify the compliance date for any local or State lead ban before using a date earlier than June 19, 1988.

Under the LCRI, water systems must confirm the service line material of a random sample of non-lead service lines from the validation pool by visual inspection of the pipe exterior at a minimum of two points. Visual inspection of the pipe exterior could be conducted by, but not limited to, potholing, viewing the service line material in the meter pit or stop box, or viewing the service line entering the building. Where ownership is shared, the water system must conduct at least one visual inspection on each portion of the service line (*i.e.,* one inspection on the system-owned portion and one inspection on the customer-owned portion of the service line). Where ownership is shared and only one portion of the service line is included in the validation pool, systems must conduct at least one point of visual inspection on the unconfirmed portion of the service line. For example, a non-lead service line is included in the validation pool because the system-owned portion of the line is made of copper due to a previous partial LSLR and the customer-owned portion of the line is estimated to be non-lead based on the materials observed in other homes built around the same time in the same neighborhood. The system will need to confirm that the customer-owned portion of the service line is non-lead through at least one point of visual inspection of the pipe exterior.

The size of the random sample of non-lead service lines from the validation pool is based on the number of service lines a water system needs to validate, at a minimum, to achieve a 95 percent confidence level (USEPA, 2023k; USEPA, 2024d). To achieve the 95 percent confidence level, the EPA requires water systems with more than 1,500 non-lead service lines in their validation pool to confirm the material at between 322 and 384 sites, as specified in the rule, depending on the specific size of the validation pool. Systems with 1,500 or fewer non-lead service lines in their validation pools must validate at least 20 percent of the total number of non-lead lines in the pool. If physical access to private property is necessary to complete the validation and the water system is unable to gain access, the system is not required to validate the service line material at that site. Instead, the system must randomly select a new service line from their validation pool to conduct the validation.

Once water systems have completed their inventory validation, they must submit to the State the results of the validation by the applicable deadline based on the system's mandatory service line replacement program. Systems required to replace lead and GRR service lines in 10 years or less must complete their inventory validations no later than December 31 following seven years after the LCRI compliance date. Systems who have reported only non-lead service lines are also subject to the validation requirement and must complete inventory validation no later than December 31 following seven years after the LCRI compliance date. Where States have required systems to replace service lines on a shortened deadline, the State is required to set a deadline for the validation. Systems that are eligible for and plan to use deferred deadlines must complete inventory validation by a deadline established by the State to be no later than three years prior to the deferred deadline. Systems must submit the results of the inventory validation. The final rule clarifies that the results of the inventory validation must also include the submission of the specific version (including the date) of the inventory that was used to determine the number of non-lead lines included in the validation pool in order to provide the State with the information needed to assess the inventory validation. The system must comply with any additional actions required by the State to address inaccuracies in the inventory.

The final LCRI was updated to also include a flexibility for water systems that have previously conducted inventory validation efforts that, at a minimum, are as stringent as the LCRI inventory validation requirements. Water systems may make a written request to the State to approve a waiver of the inventory validation requirements. To obtain a waiver, the system must submit documentation to the State by the LCRI compliance date to demonstrate that they conducted an inventory validation effort that is at least as stringent as the validation requirements specified in the rule and obtain written approval of the waiver from the State.

5. Deadline To Identify All Unknown Service Lines

a. Rationale and Proposed LCRI Requirements

For the LCRI, the EPA proposed to require water systems to identify the material of all service lines categorized as unknown in the inventory by the system's deadline to complete mandatory full service line replacement for several reasons. Using the same deadline for these two requirements eliminates the need for a separate set of requirements for this purpose, such as a minimum rate for identifying unknown service lines. In the LCRI proposal, the EPA also explained that this approach prevents additional rule complexity as well as reporting and tracking burden, a priority identified in the EPA's 2021 LCRR review notice to assure that States and water systems can effectively implement the LCRI. It also provides systems with flexibility to plan a full service line replacement program that meets local needs. Without a separate and earlier deadline to identify unknown service lines, systems can plan to identify service line materials in tandem with other infrastructure work, such as water main or meter replacement, as they are planned to occur in the proceeding years up until the deadline for service line replacement. This could allow water systems to identify service line materials more efficiently as they will already be onsite and, in some cases, may encounter the service line material directly as they perform other planned work. This efficiency could reduce the overall costs and time to identify service line materials. Aligning the service line replacement and inventory completion deadline could improve inventory information quality because systems could take additional time to develop an inventory with an emphasis on accuracy by choosing, for example, a more time-consuming technique that is also more reliable. Finally, in the proposed LCRI, the EPA noted that new technologies for identifying service line materials may be developed in coming years and existing technologies may be refined; therefore, aligning the deadline for service line replacement and inventory completion will allow systems to use these new or refined technologies on a greater proportion of their unknown lines.

For the proposed LCRI, the EPA determined that it is feasible (*i.e.,* technically possible and reasonably

affordable relative to a large system) for water systems to create a complete and accurate inventory of service line materials by the proposed service line replacement deadline to support the treatment technique for mandatory service line replacement. For the 1991 LCR, the EPA anticipated that systems that were triggered into an LSLR program should be able to locate their LSLs and provide this information in 8 to 10 years even with poor records of service line materials (56 FR 26507, USEPA, 1991). The EPA also evaluated more recent efforts by systems to replace all their LSLs and complete their inventories in 10 years or less. Seven States have inventory laws (*i.e.,* California, Illinois, Michigan, New Jersey, Ohio, Rhode Island, and Wisconsin), which together comprise nearly a third of the Nation's estimated lead content service lines (32 percent; 3.2 million lead content lines out of an estimated 9.0 million lead content lines) (USEPA, 2023l), meaning that these systems will have made progress on their inventories beyond the 2021 LCRR requirements. These State laws indicate that an inventory requirement is feasible, and inventory data show relatively low incidence of unknown service lines in some States as well as rapid progress towards identification of their unknown service line materials (USEPA, 2023k). The One-Time Update to the Needs Survey indicates that many participating systems have made substantial progress on identifying unknown service lines (median percentage of unknown lines per system is 6.5 percent); however, other participating systems have made much less progress or have not yet reported service line statuses (USEPA, 2023l; USEPA, 2024d). Furthermore, four States (Illinois, Michigan, New Jersey, and Rhode Island) passed State laws that require LSLR by a specified deadline. For these systems, inventory completion is required to comply with the mandatory LSLR requirements. For example, Michigan law requires their applicable water systems to submit a preliminary materials inventory by January 2020 and a complete materials inventory, including verification methodology and results, by January 2025, which is a five-year deadline to identify all unknown service lines (Michigan Administrative Rules, 2023). The Illinois Environmental Protection Agency (IEPA) first required their CWSs to submit an inventory by April 2018 in the repealed Public Act 099–0922 along with annual updates. Under the 2022 Lead Service Line Replacement and Notification Act, IEPA required systems to submit a complete material inventory by April 2024 (Illinois General Assembly, 2021), which gave their systems six years to identify all unknown service lines. Finally, the EPA is aware of several water systems who have fully eliminated LSLs from their distribution system at a rapid pace, which would not be possible if unknown service lines remained in the system's inventory (USEPA, 2023k).

b. Summary of Public Comments and the EPA's Response

Many commenters supported keeping the deadline to identify unknown service lines and the deadline to complete mandatory service line replacement consolidated because it streamlines administrative processes, allows systems to focus more time and resources on replacing lead and GRR service lines and identifying unknown service lines, and provides the type of flexibility to allow for inventory efforts to be tailored to individual system needs and replacement programs. Conversely, other commenters supported an earlier deadline to identify unknown service lines before the replacement deadline, ranging from three years after promulgation of the LCRI to three years before the 10-year replacement deadline to reduce the possibility of noncompliance with the service line replacement deadline. Some commenters also suggested the final rule should include a requirement for systems to meet interim deadlines to identify unknown service lines and remove unknown lines from the replacement pool.

The EPA disagrees with commenters requesting an earlier deadline for identifying all unknown service lines, noting that a single deadline streamlines administrative processes, allows time and resources to focus on both replacing lead and GRR service lines and identifying unknown service lines, and provides flexibility for water systems. Therefore, the EPA is finalizing the requirement for systems to identify all unknown service lines by the applicable mandatory service line replacement deadline, as proposed. In doing so, the EPA will prevent complicating the rule.

The 2021 LCRR requires water systems to review available sources and submit an initial inventory by October 16, 2024, and the EPA has been recommending through its LCRR Inventory Guidance that systems should identify unknown service lines (USEPA, 2022c). Therefore, the EPA expects water systems will be prepared to make necessary progress to identify unknown service lines without setting an earlier deadline for inventory completion.

c. Final Rule Requirements

In the final LCRI, water systems are required to categorize the material of all unknown service lines in the inventory by the system's deadline to complete mandatory full service line replacement.

E. Tap Sampling for Lead and Copper

1. Rationale and Proposed LCRI Revisions

Tap sampling for lead and copper is required to evaluate CCT performance using the action level and serves ''to identify the need for additional treatment and to ensure that adequate treatment is installed'' (56 FR 26514, USEPA, 1991). Specifically, the purpose of tap sampling is to identify situations where the water is too corrosive, and therefore, can trigger additional actions that water systems are required to take to reduce lead and copper exposure, including by reducing the corrosivity of water in a system by installing or re-optimizing OCCT, or through public education. Conversely, tap sampling itself is not intended to assess exposure to lead and copper from drinking water because the sampling protocol is designed to assess CCT by targeting the highest levels of lead and copper typically present at the tap, representing the high end of actual human exposures (USEPA, 1988), rather than designed to capture typical exposure to consumers. In turn, a system's compliance with the treatment technique rule is not based on tap sampling results alone, but rather on compliance with actions triggered by those results.

The EPA designed tap sampling requirements in the LCR primarily to evaluate the corrosion of lead and copper sources present in the distribution system. Water systems are required to sample at sites with a higher potential to contribute lead and copper using a sampling protocol to ''assess the degree to which a system has minimized corrosivity for lead and copper'' (56 FR 26520, USEPA, 1991). Tap sampling under the rule is not intended to represent typical drinking water consumption or exposure; rather, again, it is intended to determine the effectiveness of OCCT and whether corresponding actions are needed to reduce lead levels (USEPA, 2020e).

a. First- and Fifth-Liter Sampling

In the LCRI, the EPA proposed that systems must take first-and-fifth-liter-paired samples for lead at LSL sites and use the higher of the two values to calculate the 90th percentile lead level. This requirement would improve identification of sites with higher levels of lead at the tap and better determine

when OCCT or re-optimized OCCT in the system is necessary. The requirement to take a fifth-liter sample was first promulgated under the 2021 LCRR, while the requirement to take a first-liter sample is from the 1991 LCR. Based on evidence from Del Toral et al., 2013, Deshommes et al., 2016, Masters et al., 2021, and Betanzo et al., 2021 that lead released from LSLs is not reliably captured in just the first- or fifth-liter sample alone, as discussed in the preamble to the proposed LCRI, the EPA proposed that systems must collect both liters during the same sampling event when sampling at sites with LSLs (88 FR 84930, USEPA, 2023a).

Both first- and fifth-liter samples have been determined to provide information relevant to assess CCT. At the time of the 2021 LCRR, the EPA determined that fifth-liter samples increase the likelihood that samples capture water that has been sitting in contact with LSLs. The EPA recognized that the variability of plumbing configurations does not allow for a single prescribed sample volume to capture the highest lead level at every site; however, the EPA reviewed data from Sandvig et al. (2008), Del Toral et al. (2013), and Lytle et al. (2019) in support of selecting the fifth-liter sample in the final 2021 LCRR as a screen that is likely to detect higher lead levels than first-liter samples alone (86 FR 4226, USEPA, 2021a). In the proposed LCRI, the EPA also cited Masters et al. (2021) and Deshommes et al. (2016) in support of maintaining the requirement to collect a fifth-liter sample from the 2021 LCRR (88 FR 84929, USEPA, 2023a).

First-liter samples, which have been implemented as the compliance sampling protocol since the 1991 LCR, are useful for capturing water that has been sitting in contact with premise plumbing. For LCRI, the EPA reviewed implementation data from Michigan's revised LCR that shows that some samples collected at LSL sites measure higher lead levels in the first liter than the fifth. Michigan's requirement under State law to use the higher lead level of the two samples to calculate the 90th percentile lead level has resulted in more systems exceeding the lead action level of 0.015 mg/L than only collecting either the first- or fifth-liter sample (Betanzo at al., 2021). In addition to data from Michigan, the EPA is aware of studies that have evaluated lead sampling data collected from multiple liters at the same site in cities including Washington, DC, Flint, Michigan, and Chicago, Illinois. The data compiled in these studies similarly show variability in which liter contains the highest lead level. These data also suggest that collecting two samples and using the higher of the first- and fifth-liter lead values at LSL sites captures lead presence more effectively than collecting only one sample (Masters et al., 2021; Mishrra et al., 2021).

For the LCRI, the EPA proposed to continue collecting only first-liter samples at Tier 3 sites comprised of sites with lead connectors and sites with galvanized service lines and/or galvanized premise plumbing that were ever downstream of an LSL or connector. The EPA proposed that the first liter is more appropriate for galvanized service lines because they contribute lead primarily through the release of lead particulate. Because the mobilization of particulate lead can be highly variable, depending upon changes in pressure and flow volume, velocity, and/or direction (Schock, 1990), particulate release is not captured consistently in any individual sample. The EPA proposed that the first liter is also more appropriate for lead connectors because detectable contributions of lead from lead connectors are most likely to occur as a result of particulate lead that has dislodged from the pipe and is caught in premise plumbing, such as faucet aerators (Deshommes et al., 2016; Lytle et al., 2019). It is also difficult to identify a single designated service line sample volume that would capture water that has stagnated in a lead connector, which are short in length and typically installed closer to the water main. Additionally, water traveling from the lead connector to the faucet will undergo dispersion, resulting in lower concentrations of lead at the tap. At the time of proposal, the EPA acknowledged that particulate lead is challenging to predict and could occur in any sample volume. However, the first liter has been documented to capture the highest fraction of particulate lead (Deshommes et al., 2010). Therefore, to capture particulate lead release from lead connectors and from galvanized service lines and/or galvanized premise plumbing that were ever downstream of an LSL or connector, the first liter presents the highest likelihood of a single sample capturing particulate lead.

b. Tiering of Sampling Sites

The EPA proposed three revisions to the tiering criteria as promulgated under the 2021 LCRR. The EPA proposed to update the definition for Tier 1 and Tier 2 sites to include sites with premise plumbing made of lead due to the high potential of lead contributions associated with premise plumbing made of lead. By ''premise plumbing made of lead'', the proposal refers to premise plumbing that consists of pure lead pipes, rather than pipes made from metal alloys that may contain lead content. When sampled, systems would follow the first-liter sampling protocol at sites with lead premise plumbing, unless the site is also served by an LSL, which would require first- and fifth-liter sampling. The EPA also proposed to correct the Tier 3 description from the 2021 LCRR that inadvertently described a galvanized site currently downstream of an LSL as Tier 3 when it is a site served by an LSL and would meet the criteria of a Tier 1 or 2 site. The proposal removes the term ''currently'' from the Tier 3 provision to implement this correction. While the EPA described in the final 2021 LCRR preamble the agency's intention for galvanized service lines to be included in Tier 3, the 2021 LCRR Tier 3 provision includes only sites which ''contain galvanized lines,'' which refers to premise plumbing material and not service lines. As such, the EPA also proposed to clarify that sites served by galvanized service lines or containing galvanized premise plumbing that are identified as ever being downstream of an LSL or a lead connector in the past are included in Tier 3.

The EPA also proposed several revisions and additions for sites included in Tier 3. In addition to maintaining sites with galvanized premise plumbing that are downstream from a lead connector in Tier 3, the EPA proposed to expand the sites included in Tier 3 to also include any sites with galvanized premise plumbing or served by galvanized service lines that were ever served by a lead connector in the past. While the EPA was not aware of information at the time of the proposed LCRI regarding the national extent of homes containing galvanized premise plumbing that are downstream of a lead source, the addition of galvanized premise plumbing is consistent with the inclusion of galvanized service lines that were ever downstream of an LSL as sites with a higher potential to contribute lead to drinking water than sites in Tiers 4 and 5. Like galvanized service lines downstream of an LSL discussed in section IV.E.1.a of this preamble, galvanized premise plumbing that is downstream of a lead source can also adsorb and release lead primarily through particulate release.

The EPA also proposed to include in Tier 3 sites with any non-lead service line material or non-lead premise plumbing that are currently served by a lead connector. With the proposed revisions to inventory requirements to include information on lead connectors, some systems will have improved

knowledge of sites with lead connectors. The EPA proposed that sites with lead connectors are not Tier 1 or 2, but Tier 3, based on the EPA's priorities for the proposed LCRI to identify sites through sampling with the highest lead levels and the difficulty in detecting lead contributions for lead connectors, which is similar to galvanized service lines discussed in section IV.E.1.a of this preamble. At the time of proposal, the EPA cited Deshommes et al. (2016) and Lytle et al. (2019) that show detectable contributions of lead from lead connectors are most likely to occur as a result of particulate lead that has dislodged from the pipe and is caught in premise plumbing, such as faucet aerators. The EPA recognized that, due to the limited length of lead connectors, the amount of lead contributed from them is expected to be less than from LSLs, which are typically much longer in length, where all other aspects of the pipes are equal. Under the proposal, Tier 3 would include: (1) Sites served by galvanized service lines that ever were downstream of an LSL or lead connector; (2) sites with galvanized premise plumbing that ever were downstream of an LSL or lead connector; and (3) other sites currently served by a lead connector (e.g., a site served by a copper service line downstream of lead connector.) The EPA proposed to maintain the criteria for Tier 4 and Tier 5.

c. Sample Site Selection

For LCRI, the EPA did not propose any changes to the requirement for systems to select replacement sampling sites within a reasonable proximity. In the proposed LCRI, as maintained from the 2021 LCRR, systems must sample from the same sites in consecutive tap monitoring periods and, when unable to do so, must select a replacement site that meets the same tiering criteria and is within reasonable proximity of the original site.

The EPA also did not propose any changes to the requirement for systems to sample sites from the highest tier available (Tier 1 is the highest and Tier 5 is the lowest), as well as the requirement for systems to collect 100 percent of samples from available LSL sites. The proposed LCRI specifies that systems may choose alternate sampling sites when they are not able to gain access to a site.

d. Frequency and Quantity of Sampling

In LCRI, the EPA proposed revisions to tap sampling frequency requirements to conform with the proposed elimination of the trigger level. The EPA proposed to maintain six-month monitoring as the standard monitoring frequency, as well as the pathway to triennial monitoring for any system that does not exceed the PQL for two consecutive monitoring periods. With the proposed elimination of the trigger level, the EPA proposed that small and medium systems monitoring annually would qualify for triennial monitoring if they do not exceed the lead and copper action levels for three consecutive years. The EPA also proposed to maintain the pathway to annual monitoring for any system that does not exceed the action level for two consecutive six-month tap monitoring periods, at the lower proposed action level of 0.010 mg/L. Also, the EPA proposed to maintain the nine-year reduced monitoring waiver.

The EPA did not propose any changes to the minimum number of samples required to be collected by systems. The proposed rule maintained the requirement for systems on annual reduced monitoring to collect and analyze the standard number of samples for lead and a reduced number of samples for copper.

e. Standard Monitoring

In LCRI, the EPA proposed that systems with unknown sites in their inventory at the compliance date would be required to conduct standard six-month monitoring in the first six-month tap sampling period following the compliance date. These systems would be in addition to the 2021 LCRR requirement, which was maintained in the proposed LCRI, that any systems with lead and/or GRR service lines in their inventory at the compliance date conduct standard monitoring beginning with the first full six-month monitoring period after the compliance date. The proposed requirement to begin standard monitoring following the compliance date was accompanied by the proposed requirement for systems to submit an updated site sample plan to the State prior to the first tap monitoring period, as described in section IV.N of this preamble. The EPA proposed that systems with lead, GRR, and unknown service lines sample under the standard monitoring schedule to ensure that systems with the highest potential for lead, and which are most impacted by the changes to sampling protocol, could determine whether they are exceeding the new action level as soon as practicable to determine next steps such as remediation activities through CCT or public education to protect public health. Systems required to conduct standard monitoring in accordance with this requirement would need to complete two consecutive, six-month tap monitoring periods before they could qualify for a reduced monitoring schedule.

f. 90th Percentile Value Calculation and Inclusion of Additional Samples

The EPA proposed to maintain the LCRR approach for calculating the 90th percentile level when a system with LSLs does not have enough sites in Tiers 1 and 2 to meet the minimum number of samples required. Specifically, a system must use all samples collected at Tier 1 and 2 sites and only the highest results from samples collected at Tier 3, 4, and 5 sites (in that order) to meet the minimum number of samples. For example, if a system is required to collect 100 samples and the system collects 80 samples at Tier 1 and 2 sites, and 30 at Tier 3 sites, the system would have to use the 80 samples from Tier 1 and 2 sites and only the 20 samples with the highest lead concentration from the Tier 3 sites. While the EPA was not aware of situations where higher concentrations in lower tiers are expected, as discussed in the preamble to the proposed LCRI (88 FR 84932, USEPA, 2023a), the purpose of this proposed requirement was to prevent systems from collecting additional samples from sites less likely to contain lead (*i.e.,* Tiers 3, 4, and 5) to reduce their 90th percentile lead value.

The EPA proposed to clarify that water systems seeking to reduce monitoring frequency or cease specific actions under the rule, including CCT and public education-related requirements, cannot do so with fewer than the required minimum number of samples. For example, a small or medium system without CCT would be allowed to propose stopping the CCT steps using data showing the system is at or below the lead action level for two consecutive tap monitoring periods. As described in the preamble to the proposed LCRI, systems have been advised in past EPA guidance to calculate 90th percentile lead and/or copper levels even when there are insufficient samples (88 FR 84932, USEPA 2004c, USEPA 2023a). Under the proposed rule, the data showing the system has a 90th percentile lead level at or below the lead action level must be calculated from a compliance data set of at least the minimum number of samples required. In other words, a system with an insufficient number of samples cannot use the results to reduce treatment technique actions. The EPA proposed this clarification to improve implementation. In addition, the agency is concerned that water systems may purposefully fail to comply with the minimum monitoring requirements in

an attempt to reduce required compliance actions through provisions intended for systems with demonstrated lower lead or copper levels.

The EPA proposed to exclude additional samples collected as part of required monitoring following full or partial service line replacement from the 90th percentile calculation. The 2021 LCRR requires water systems to use results of any additional monitoring (*e.g.,* consumer-requested samples) in the 90th percentile calculation if the samples meet the tiering and sample protocol requirements. At the time of the LCRI proposal, the EPA was concerned that water systems may include samples from follow-up monitoring following full or partial replacement that may not be known to meet the correct sampling tier and may not be reflective of corrosion control performance.

The EPA proposed to maintain flexibility for systems sampling at sites in response to customer requests to use alternative sample volumes and stagnation times. The EPA proposed a revision to require these samples to include sample volumes representative of both premise plumbing and the service line when the customer is served by a lead, GRR, or unknown service line (see section IV.J of this preamble for details on consumer-requested sampling). The EPA also proposed to maintain the requirement for these additional samples to be included in the 90th percentile calculation only if the sample meets the compliance site tiering and sampling protocol, including stagnation time, sample volume, and whether the sample is collected within the tap sampling period.

g. Wide-Mouth Bottles

The EPA proposed a revised definition of wide-mouth bottles for tap sampling to address uncertainty around which diameter should be measured. In the proposed LCRI, the EPA clarified the definition for wide-mouth bottles to specify it means bottles that are one liter in volume with a mouth, the outer diameter of which measures at least 55 mm wide (see section IV.O.3 of this preamble).

h. Sample Invalidation

The EPA proposed that States have the authority to invalidate samples not collected in accordance with § 141.86(b)(1), including requirements for minimum stagnation period, sample volume, sample bottle characteristics, sample collection location, and rules regarding sampling instructions. The EPA proposed that this authority is in addition to the existing authority under the 2000 LCR for States to invalidate samples not collected in accordance with the tiering criteria in § 141.86(a)(4). The proposed revision would allow States to invalidate samples based on information regarding sample collection. For example, the rule specifies collection of samples at a kitchen or bathroom sink cold-water tap. If a sample was taken at a hose bib, States could invalidate that sample because it would not meet the sample collection criteria.

i. Practical Quantitation Limit

The PQL is defined at 40 CFR 141.2 as the minimum concentration of an analyte (substance) that can be measured with a high degree of confidence that the analyte is present at or above that concentration. PQL is the level established in a regulation to identify the lowest reliable concentration of an analyte laboratories are able to measure.

For the proposed LCRI, the EPA reconsidered the practical quantitation limit used in the LCR to see if there was evidence to support lowering it. The lead practical quantitation limit is currently set at 0.005 mg/L and is incorporated into the National Environmental Laboratory Accreditation Conference (NELAC) Institute (The NELAC Institute, 2021) accreditation process. NELAC was established by the EPA in 1995 to develop consensus national standards for environmental laboratory accreditation. These established standards work to ensure the quality of environmental data from lab to lab. The EPA also received data, during the development of the proposed LCRI, from a company that conducts proficiency testing and at that time, the agency was not aware of data to support proposing to lower the PQL (''Lead Drinking Water Proficiency Testing Data (2016–2022)'' available in the LCRI docket EPA–HQ–OW–2022–0801). The EPA also noted that while the method detection limit (MDL) of lead can be as low as 0.0006 mg/L under certain EPA approved methods (Diebler, 2013), the PQL is set higher than the method detection limit to account for analytical variability, along with the EPA's standard practice of adding an uncertainty factor of 5–10 (53 FR 31550, USEPA, 1988). Thus, the EPA proposed that the current practical quantification limit of 0.005 mg/L is consistent with published detection limits. Further, the EPA was not aware of national-scale data evaluating lead detection limits, or on the number or percentage of labs nationwide measuring lower levels. The EPA was not aware of any additional evidence to support lowering the current lead PQL below 0.005 mg/L in the proposed LCRI.

2. Summary of Comments and the EPA's Response

a. First- and Fifth-Liter Sampling

The EPA received many comments supporting the proposed sampling protocol, including the use of the higher of the first- and fifth-liter sample in the 90th percentile calculation. These commenters stated that the first- and fifth-liter protocol better assesses situations with a higher potential of lead faced by consumers. Some commenters expressed concern that the fifth-liter sample does not adequately represent CCT performance. Other commenters asserted that the fifth-liter sample should not be used for multi-family sites because it is not possible to meet the intent of sampling, including both capturing water in contact with the service line and meeting the six-hour minimum stagnation time. Some that supported the proposed protocol requested that it be applied in additional situations, such as at Tier 3 sites and at sites following service line removal.

The EPA agrees with comments in support of requiring systems to collect the first- and fifth-liter samples at sites served by LSLs. As discussed in the proposed LCRI under section V.C.1, the EPA evaluated implementation data from Michigan's revised LCR that shows some first-liter samples collected at LSL sites measure higher lead levels than fifth-liter samples collected at the same sites (Betanzo at al., 2021). The EPA cited Masters et al. (2021) and Mishrra et al. (2021) which also show results where the first and fifth liters are more effective than either sample alone at indicating the presence of lead in drinking water.

The EPA disagrees that the fifth-liter sample should not be used for compliance sampling. The EPA acknowledged in the final LCRR preamble that the fifth-liter sample may not correspond to the sample volume with the highest lead levels in all cases, but selected it as a sample ''more representative of lead concentrations in service lines than the first-liter sample'' and ''most likely to contain the water that remained stagnant within a customer-owned portion LSL'' (86 FR 4226, USEPA, 2021a). This remains true for multi-family residences where the LSL may reside at a location farther than that captured by the fifth liter, but the fifth liter, as compared to the first liter, will capture water that has undergone less dispersion since the LSL. For this reason, the EPA does not agree that the

fifth liter should not be used at multi-family residences. The EPA also disagrees that the fifth liter cannot be used to assess CCT performance. Both first- and fifth-liter samples seek to identify situations with high lead levels, specifically by selecting the water volumes most likely to contain elevated lead levels, that can be remedied by adjustments to CCT and public education outreach.

The EPA does not agree the first- and fifth-liter sampling protocol should be applied to Tier 3 sites. As previously discussed in IV.E.1.a of this preamble, the fifth liter does not help to assess CCT performance in situations such as galvanized service lines where particulate lead is the most likely contributor to lead in drinking water and lead connectors where lead components are situated far from the tap and undergo dispersion prior to reaching the tap. Specifically, in these situations, a first-liter sample is more appropriate to evaluate CCT as it will capture water in contact with particulate lead trapped in premise plumbing.

The EPA also requested comment on ''the applicability of alternate sampling protocols to assess CCT performance, increase customer participation, and other relevant factors.'' Commenters requested that only the fifth liter be used to calculate the 90th percentile since systems are not required to remove premise plumbing features containing lead. Similarly, commenters cited concerns over the requirement to leave aerators in place during sampling because systems do not have to clean aerators with trapped particulate. Other commenters expressed support for only using the first liter in 90th percentile calculations, since the lead and copper NPDWRs implemented to date have only required systems to take first-liter samples and thus, fifth-liter samples would be a departure from tap sampling used in the past to evaluate CCT performance. The EPA interprets this comment to indicate that the commenter feels a long record of sampling under a single protocol offers valuable information when applying the data to decisions regarding CCT. One commenter requested the EPA further study the potential of random daytime sampling as a method that better represents lead and copper exposure and is easier to implement, since the method does not require a set stagnation period. Lastly, the EPA also received a request to allow the use of updated lead-sensing technology, such as a rapid biosensor test that can evaluate the presence of lead above 0.010 mg/L in water, as part of a CCT evaluation protocol.

The EPA disagrees with only requiring systems to consider the fifth-liter sample in calculating the 90th percentile and also disagrees that systems are not responsible for controlling for lead in premise plumbing through CCT, including lead trapped in faucet aerators. While systems are not required to remove lead premise plumbing materials, the EPA determined in the LCR that water systems can affect lead levels at the tap by adjusting the corrosivity of the water delivered to consumer so it will not leach lead from multiple sources of lead in the distribution system, including premise plumbing (see section IV.A of this preamble for further discussion on the EPA's regulatory approach). Additionally, as described in the proposed LCRI in section V.C.1 (88 FR 84929, USEPA, 2023a), the first-liter sample can capture higher levels of lead from LSLs than the fifth-liter sample in some conditions. Specifically, when water chemistry results in the formation of relatively fragile scales, maximum lead values have been documented in the first liter of sampling at some homes in Flint, Michigan (Lytle et al., 2019), Washington, DC (Clark et al., 2014), Providence, Rhode Island (Clark et al., 2014), and Chicago, Illinois (Masters et al., 2021). The lead release captured in the first liter is attributed primarily to lead particles that can become detached, such as from the LSL or from galvanized pipes that are or were downstream of lead pipes, and have accumulated in the premise plumbing. Therefore, the EPA finds that systems should continue to sample the first liter, as required under the 1991 LCR, in addition to the fifth liter, as incorporated from the 2021 LCRR, to best identify situations where CCT is operating insufficiently to prevent lead in drinking water.

The EPA disagrees that past use of first-liter sampling prevents the agency from adopting a new protocol based on new and updated information because prior requirements, including tap sampling protocols, do not limit the agency's ability to update lead and copper NPDWRs based on the best-available scientific and technical information and the learned experiences of States and systems. The first- and fifth-liter sampling protocol has been implemented for several years at the State-level in Michigan and is accompanied by evidence demonstrating that the protocol proposed by the EPA is better able to identify lead presence than the first- or fifth-liter sample alone (Betanzo et al., 2021). The EPA disagrees that the first- and fifth-liter sampling protocol is less effective for evaluating CCT than the first-liter sampling protocol. The first- and fifth-liter sampling protocol is suitable for compliance testing because it uses the same basis for evaluation of CCT performance as was used for the first-liter sampling protocol—that is, whether lead is released as either dissolved or particulate lead. The EPA agrees that systems' history of first-liter sampling since the 1991 LCR will offer systems valuable information about their CCT performance and adds that the fifth-liter samples will improve the information available to make decisions regarding CCT. Additionally, as previously discussed in IV.E.1.a of this section, the EPA finds that the fifth liter can capture water in contact with the service line in many, though not all, sites. Further, the EPA disagrees that the change is too difficult for systems and States to implement. Without revisions in the LCRI, a fifth-liter-only protocol is in effect under the 2021 LCRR. The EPA is adding the fifth-liter sample, which many systems are currently preparing to implement, to the existing first-liter sample to improve the monitoring technique for detection of lead at drinking water taps when service line sources of lead are known.

The EPA acknowledges that a protocol with reduced stagnation time can ease consumer sampling burdens. However, no commenters submitted, and the EPA does not find that there is, sufficient information to select random daytime sampling and other alternative sampling technologies in lieu of the current sampling protocol for the assessment of CCT, especially for sampling water in contact with the service line. The first-liter and the first- and fifth-liter sampling protocols in the LCRI are required in combination with tiering criteria that prioritize sites with the highest potential exposure to lead and copper to conduct targeted assessments of systemwide CCT performance. The agency does not agree that these alternative sampling methodologies have been shown to provide equal or improved public health protection as a compliance strategy without further study.

Regarding comments requesting that the EPA consider the use of rapid at home testing for lead in drinking water for regulatory compliance, the EPA does not agree that there currently is a role for rapid at-home lead-sensing technology for assessment of the effectiveness of CCT. Generally, at-home lead-sensing technologies can be characterized as qualitative because they do not assess the contribution of particulate lead. Qualitative, at-home

tests are useful for assessing the potential presence of lead in drinking water but not for making quantitative assessments; nor do they account for the variability of lead levels as discussed in section IV.A of this preamble.

b. Tiering of Sampling Sites

For the proposed LCRI, the EPA requested comment on the sites included in Tier 3 and whether all of the proposed sites should be included in Tier 3, if additional sites should be included, or if some should be included in a different, lower priority tier, such as Tier 4. Specifically, comment on whether sites served by galvanized service lines or containing galvanized premise plumbing that are identified as ever being downstream of an LSL or lead connector should be included in the same tier as other sites with a current lead connector (*e.g.,* copper service line downstream of a lead connector). The EPA received comments on the sites proposed to be prioritized in Tier 3, including requests to move sites with galvanized service lines downstream of a previously removed lead connector and sites with lead connectors to a lower tier than sites with lead solder, which were proposed to be included in Tier 4. In support of this recommended revision, commenters described data showing that lead levels at sites served by galvanized service lines downstream of previously removed lead connectors were consistently lower than lead levels at sites with lead solder. However, these commenters did not provide the data described to the EPA. The EPA also received comments both in support of, and stating concerns with, including sites characterized by premise plumbing in the tiering criteria. The latter commenters articulated concerns over whether systems would be required to inspect plumbing within structures to determine whether they contain material that would place the structure in a sampling tier, such as Tier 1 or 2 for sites with lead premise plumbing and Tier 3 for sites with galvanized premise plumbing. Some commenters provided support for including lead connectors in Tier 3 and agreed connectors should be in lower tiers than sites served by LSLs. Lastly, the EPA received requests to simplify the tiering structure, including suggestions to remove premise plumbing characteristics and a suggestion to remove multi-family versus single-family structure characteristics. Commenters asserted that complicated tiering is difficult to implement when homeowners are the ones conducting sampling.

The EPA agrees that galvanized service lines downstream of a previously removed lead connector are likely to present a lower likelihood of contributing to lead in drinking water than sites with galvanized service lines downstream of a previously removed LSL (Tier 3) as well as sites with lead solder (Tier 4). Lead connectors are shorter in length than LSLs and the length of LSL has been correlated with the amount of lead released (Deshommes 2016). Thus, a relatively shorter upstream lead connector may lead to less buildup of lead-containing scale on downstream galvanized pipe scale than an upstream LSL. For the final LCRI, Tier 5 includes sites that are representative of sites throughout the distribution system. Where galvanized service lines downstream of a previously removed connector are representative of sites throughout the distribution system, they would be sampled in Tier 5.

As proposed, the EPA placed sites with lead connectors in Tier 3. The EPA agrees with commenters that sites with lead connectors should be tiered below sites with LSLs in Tiers 1 and 2. The EPA also emphasizes that sites with minor variations in the likelihood of lead contributions do not need to be prioritized into separate tiers since further divisions within tiers would result in smaller pools of sites that are likely to be insufficient to equal or exceed the minimum required number of samples. All samples included in the 90th percentile calculation are given equal weight in the 90th percentile calculation, including samples from different tiers and samples with different probability of lead contribution within the same tier. The equal weight given in the 90th percentile calculation means that even if sites are prioritized differently for sample collection, once they are sampled and if used in the calculation of the 90th percentile, each site contributes equally in the calculation. Sites such as those grouped under Tier 3, each of which may have slightly higher or lower likelihood of contributing lead to drinking water, will all be included in the 90th percentile calculation. Therefore, while the types of sites included in Tier 3 may have slight differences in the likelihood of contributing lead, in many cases, systems will likely need to sample at multiple types of Tier 3 sites to meet their minimum required number of sites and consider those samples equally for compliance purposes.

As previously stated, the EPA disagrees that systems should not be required to sample for lead in drinking water when the lead sources are in premise plumbing. Premise plumbing, like service lines, is impacted by the corrosivity of the tap water. Thus, preventing the leaching of lead and copper from premise plumbing as a result of water corrosivity is under the control of water systems. The purpose of sampling at sites with premise plumbing known to contain lead is to alert the system to potential corrosion control issues leading to elevated lead in such sites. Commenters opposed to including premise plumbing in site tiering may be incorrectly characterizing the requirement to identify premise plumbing materials in their service line inventory. The LCRI does not require water systems to conduct material inventories for premise plumbing as required for service lines (§ 141.84(a)); however, the LCRI does require that sites with lead premise plumbing and galvanized premise plumbing material ever having been downstream of a LSL be included as part of site sample collection if known to the water system. Systems should include sites with lead premise plumbing as Tier 1 or 2 and galvanized premise plumbing ever having been downstream of a LSL as Tier 3 when they are aware of the material composition; however, again, the LCRI does not require systems to proactively identify or inventory where lead premise plumbing exists for purposes of meeting the tiering requirements. Systems may encounter premise plumbing in the course of normal operations including through service line identification and replacement that would provide information to inform tier site selection.

The EPA disagrees with commenter suggestions to remove premise plumbing from sample tiering, for reasons described above, and with suggestions to combine single-family and multi-family structures. The 2021 LCRR maintained the tiering structure established in the LCR for prioritized, targeted monitoring of sites with a higher potential for lead contribution to drinking water, with the highest priority tiers (Tiers 1 and 2) comprised of sites with LSLs representing the sites with the highest potential to contribute lead. Tier 1 sites include single-family structures served by LSLs and Tier 2 sites include multi-family residences served by LSLs. The Tier 2 sites serve to distinguish multi-family structures with lead as sites with a higher potential to contribute lead to drinking water than Tier 3 sites, which are sites that are served by a lead connector or sites served by a galvanized service line or containing galvanized premise plumbing that are identified as ever

having been downstream of a lead service line. In addition, the EPA did not include multi-family structures in Tier 1 because they have more complex plumbing layouts compared to single-family structures in Tier 1. While the fifth-liter sample increases the chance of detecting water that has been sitting in contact with an LSL, generally, it is more difficult to detect corrosion control issues in multi-family structures as compared to single-family structures.

c. Sample Site Selection

The EPA received comments regarding the selection of replacement sites from the sampling pool when previously sampled sites are no longer accessible, and the timing under which systems can sample at replacement sites, including sites that are in a lower tier. Specifically, as mandatory service line replacement is underway, commenters expressed concern over identifying replacement sites as the number of sites in Tiers 1 and 2 diminish. Commenters expressed concern that the requirement for systems to sample at 100 percent of LSL sites under § 141.86(a)(3) could make them repeatedly return to homes with LSLs that have refused or declined to respond to requests for sampling. Commenters requested the EPA better describe how and when sites can be considered unavailable. Another comment suggested that systems should be required to maintain records on customer refusals for tap sampling for customers with Tier 1 sites. Commenters noted this recordkeeping would help States ensure that no Tier 1 sites are missed by systems. Commenters also expressed concern over the requirement for systems to replace unavailable sampling sites with locations in a reasonable proximity. These commenters stated it could be difficult for systems to interpret the meaning of ''reasonable proximity.''

The EPA agrees that systems should be able to consider sites unavailable when customers refuse to participate in tap sampling, recognizing the tap sampling sites are within structures such as homes, and that this would constitute a lack of access by the system to conduct tap sampling at that site (see section IV.A of this preamble for details on control). As such, the EPA added a provision to the final LCRI at § 141.86(a)(4) to allow systems to consider sites unavailable for tap sampling after a customer refuses to participate or a customer does not respond after two outreach attempts.

In addition, the EPA agrees in part with requests to add system reporting requirements to help States review when customer refusals lead to a lack of access for tap sampling and systems sample at replacement sites. To assist State tracking of system activities related to selection of replacement sites, the EPA added a requirement to the final LCRI at § 141.90(a)(2)(viii) for systems to report the number of customer refusals to participate in tap sampling during each tap sampling period. This requirement is in addition to existing reporting requirements under § 141.90(a)(2)(v) for systems to provide an explanation for any site sampled for compliance monitoring that was not sampled in the previous tap monitoring period.

The EPA also agrees that the 2021 LCRR requirement to identify replacement sites within a reasonable proximity as this could be challenging to interpret and is no longer needed with the LCRI requirement of mandatory service line replacement. Therefore, the EPA removed this requirement in the final LCRI.

The EPA requested comment on ''whether State authority to specify sampling locations when a system is conducting reduced monitoring should apply regardless of the number of taps meeting sample site criteria.'' Commenters expressed that States may not have the appropriate information to specify locations, or if they have that knowledge, they may not have the resources or capacity to do so. Others expressed that States will likely not exercise their authority to specify locations, but the authority may come in use from time to time.

The EPA disagrees that States do not have the information necessary to specify accurately tiered locations since systems are required to report their inventory of service line material to the State under § 141.90(e). States have access to information provided by systems, submitted via both site sample plans and service line material inventories, and are able to review them, as needed, to determine if the selected sampling pool should be modified to prioritize sampling at sites with a higher potential for lead contribution. State review of sampling locations can be helpful to assess system-specific situations where the selection of sites, even when the selection meets rule requirements, underestimates the potential for lead in the systems drinking water (Stratton, et al., 2023). The final LCRI maintains the authority for States to require modifications to site sample plans, but does not require that States review and approve them. The option to review site sample plans enables States to prioritize resources for the systems most in need of oversight. The EPA encourages States to review site sample plans to provide feedback to systems to ensure that their sampling approach meets the requirements under the LCRI, instead of waiting until sample results are submitted to the State to alert systems to issues in the sampling approach that could result in the need to resample, such as due to incorrect tiering.

The EPA also received a comment requesting clarification on whether sites with installed point-of-use treatment can be sampled for lead and copper when the point-of-use device is bypassed. Installed point-of-use devices are those attached to premise plumbing and deliver treated water through a tap. While point-of-use devices can be bypassed, such that samples can be collected through premise plumbing without passing through the point-of-use device, doing so requires a more complex sampling protocol. The EPA disagrees with increasing the complexity of tap sampling in this way and did not make changes to the final LCRI to allow for sampling at bypassed sites. Therefore, the final LCRI does not allow sites with installed point-of-use or point-of-entry devices to be selected for compliance tap sampling, except in water systems using these devices at all service connections for primary drinking water taps to meet other primary and secondary drinking water standards as under § 141.93(c)(1).

d. Frequency and Quantity of Sampling

The EPA received comments regarding the number of sites sampled and the frequency of sampling.

i. Minimum Number of Sites

Some commenters were concerned that the reduced minimum number of sites required for systems on reduced monitoring is insufficient and recommended that systems always collect at the standard minimum number of sites regardless of their monitoring schedule. Other commenters supported the use of a reduced number of monitoring sites but suggested the EPA simplify and reduce burden on systems by requiring those on annual reduced monitoring to sample at a reduced number of sites for both lead and copper instead of the current requirement to sample at the standard number of sites for lead and the reduced number of sites for copper.

The EPA disagrees with commenters stating the number of sampling sites required for reduced monitoring is too low or that all systems should sample at the same number of sites. Reduced sampling requirements effectively prioritize sampling resources, including

State time and effort, to systems with the highest potential for lead and copper in drinking water. Additionally, the lower lead action level means that systems must meet a stricter threshold to qualify for reduced monitoring. The EPA is maintaining the requirements for reduced monitoring in the final LCRI; systems can only qualify for a reduced minimum number of monitoring sites after they have demonstrated low levels of lead in at least two consecutive tap monitoring periods. At their discretion, systems remain able to collect samples above the minimum number required, including samples taken by customer request under § 141.85(c) that meet the requirements for compliance lead and copper samples.

The EPA does not agree that requiring different minimum numbers of sites for annual monitoring of lead and of copper is too burdensome or confusing for systems because the same sample can be used for both lead and copper analysis. The tiering criteria for site selection is not dependent on whether the sample is collected for both lead and copper analysis or only lead analysis. Systems only need to collect one first-liter or first-and-fifth-liter-paired sample from sites equal to the standard minimum number of sites to meet the requirements of annual reduced monitoring according to § 141.86(d)(2)(i). All samples collected from the standard minimum number of sites are analyzed for lead. Then, systems are only required to analyze a portion of those samples equal to the reduced minimum required number of copper monitoring sites, thus reducing the costs of sample analysis.

The EPA maintains that a standard number of monitoring sites for lead for systems on an annual reduced monitoring schedule is reasonable and disagrees with comments that systems on annual reduced monitoring should sample at a reduced number of sites for both lead and copper. The purpose of reduced monitoring is to alleviate sampling burdens on systems with a lower potential of lead and copper occurrence in drinking water, while maintaining a minimum level of monitoring commensurate to the likelihood of deviations in CCT performance. Systems on annual reduced monitoring already have a reduced burden by sampling once instead of twice per year, thereby representing a burden reduction even when sampling at the standard number of sites for lead. Furthermore, triennial reduced monitoring, where systems sample every three years at a reduced number of sites for both lead and copper, is allowed only after systems have met more rigorous requirements of three years at or below the action level or one year at or below the PQL and systems with CCT must also maintain their OWQPs. Reduced monitoring on a triennial schedule is reserved for the systems with the lowest potential of lead and copper in drinking water, as evidenced by consistently low levels of lead. The final LCRI maintains the standard number of sites for lead on an annual monitoring schedule due to the critical role of sampling in assessing issues in CCT performance and the goal of preventing adverse health effects from lead to the extent feasible. See section IV.M of this preamble for details on the LCRI approach to copper.

ii. Nine-Year Waiver

Some commenters recommended the EPA eliminate the nine-year waiver to limit the amount of time between sampling. The EPA disagrees that the nine-year waivers, which includes the copper waiver and lead waiver, should be eliminated. The nine-year waivers, which have been a part of the lead and copper NPDWRs since the 2000 LCR, offer flexibility to the smallest systems, and requires that those systems meet strict criteria to receive a waiver. Specifically, water systems must meet both a materials criteria (§ 141.86(g)(1)) and a monitoring criteria (§ 141.86(g)(2)). Water systems may qualify for a lead and/or copper waiver to monitor at a nine-year frequency only if they certify to the State that the system has no lead and/or copper-containing plumbing materials in their system, including premise plumbing, and have sampling results that do not exceed the lead and/or copper PQLs, respectively. The nine-year waivers provide very small systems with the lowest potential for lead and/or copper a potential pathway to allocate limited resources for other purposes. The nine-year waivers are not available to larger systems since it is not feasible for larger systems to determine a complete absence of plumbing materials containing lead and/or copper in their distribution system and premise plumbing.

iii. Sampling During Mandatory Service Line Replacement

The EPA also received feedback that sampling during mandatory service line replacement would place too much burden on systems. In response, some commenters requested the EPA waive sampling requirements until service line replacement is completed to help systems meet service line replacement deadlines. The EPA does not agree that systems should be allowed to waive or otherwise suspend sampling during service line replacement because it is important and feasible for systems to maintain the treatment technique for CCT and public education during service line replacement, which includes maintaining OCCT and taking public education actions following an action level exceedance. Tap sampling is a critical component for both assessing CCT performance and requiring certain public education activities. Further, systems have been conducting sampling under the LCR for many years and already have processes and experience in place to continue conducting monitoring.

e. Standard Monitoring

The EPA requested comment on whether a phased or alternative approach should be considered for systems required to begin standard monitoring and required to submit site sample plans to the State by the start of the first full tap sampling period following the compliance date. Commenters expressed concerns over the ability of States to review new site sample plans in a short timeframe, lab capacity and supply chain issues, and the ability of systems to simultaneously implement additional monitoring requirements while conducting mandatory service line replacement. Commenters offered several suggestions for phased and alternate approaches. Commenters suggested that systems be phased into standard monitoring based on system size, such as an approach similar to one employed under another EPA rule, the Stage 2 Disinfection By-products Rule. Commenters recommended large systems should comply with standard monitoring first. These commenters argued this option would offer the most public health protection since large systems combined serve the greatest total number of people, while allowing smaller systems, which serve fewer people and typically have more limited resources, more time before beginning standard monitoring. Other commenters suggested that small systems should comply soonest followed by medium systems and then large systems, as small systems have the least complex site sample plans and require the least review. These commenters indicated that site sample plans from larger systems, which sample at the greatest number of sites, will require more time for States to review them. Other commenters suggested that systems be staggered according to the value of their 90th percentile lead level, where systems with the highest lead levels would be required to begin standard monitoring

before systems with lower lead levels. This approach would prioritize State and system resources to review and implement sampling at the greatest number of sites and with the highest frequency for systems with the highest potential for lead and copper in drinking water. Additionally, the EPA received comment that all systems should be required to conduct two rounds of standard monitoring as a result of promulgating the LCRI, with varied suggestions ranging from one year after promulgation to dates staggered for the first few years after the compliance date. Lastly, the EPA received suggestions for exemptions conducting standard monitoring at the compliance date, including systems with State-approved supplemental monitoring programs and systems already implementing first- and fifth-liter monitoring at LSL sites.

The EPA agrees that the rule should both limit the burden on systems and States and prioritize actions that are most protective of public health to the extent feasible. To facilitate these goals, the EPA is finalizing requirements at § 141.86(c)(2)(i) for only those systems with any lead and/or GRR service lines in their inventory at the compliance date and at § 141.86(c)(2)(ii) for any system at the compliance date whose most recent 90th percentile lead and/or copper levels exceed the action levels under the LCRI to conduct standard monitoring starting with the first full tap monitoring period after the compliance date. The EPA does not agree that systems with known lead-contributing service lines should delay monitoring, since it is important to assess CCT with the updated tap sampling protocol for systems with known sources of lead. Systems without known lead and GRR service lines in their inventory at the compliance date will only be required to conduct standard monitoring if they do not qualify for reduced monitoring, including meeting the lead and copper action levels under the LCRI. This incentivizes systems to identify and replace all lead and GRR service lines in their distribution system before the compliance date, resulting in the public health benefits of service line replacement to be realized more quickly. Additionally, systems with lead and GRR service lines that adopt the sampling protocol under the LCRI prior to the compliance date and measure 90th percentile levels at or below the LCRI action levels are not required to conduct standard monitoring at the compliance date. More specifically, for systems with lead and GRR service lines to stay on reduced monitoring, the complete sampling protocol must include the first- and fifth-liter sampling protocol at sites served by LSLs as described in § 141.86(b)(1)(ii), all sample collection requirements in § 141.86(b)(1) and (3) (such as stagnation times and sample volume), and priority tiering requirements to sample at sites served by lead and GRR service lines as described in § 141.86(a).

The EPA is not finalizing the proposed requirement to require systems with unknown sites but no lead and/or GRR service line sites in their inventory at the compliance date to start standard six-month monitoring in the first six-month tap sampling period following the LCRI compliance date. The EPA has determined that systems with known lead and GRR service lines have the greatest potential to have lead that can be better identified with the revised tap sampling protocols. By requiring these systems to implement the revised tiering and tap sampling protocols as soon as possible, the final rule facilitates expedited identification of systems that need to take additional actions based on their tap sampling results to reduce drinking water lead exposure and protect public health. Systems with unknown service lines but without at least one known lead and/or GRR service line on the LCRI compliance date will not have to meet the standard monitoring requirements under the LCRI unless they identify a known lead or GRR service line among their unknown lines or are required by another provision in the LCRI, such as exceeding the action level or conducting source water/treatment changes. The EPA estimates that many of the systems with either all unknown service lines or a combination of unknown and non-lead service lines are small water systems. This conclusion is based on an evaluation of the 7th Drinking Water Information Needs Survey and Assessment, which indicated that an estimated 44 percent of small systems serving 3,300 persons or fewer, approximately 20,000 systems, have either all service lines of unknown material or some service lines of unknown materials and non-lead service lines (USEPA, 2024a, chapter 3). The EPA believes these systems will better be able to focus time and resources on the service line materials inventory requirement to determine the material of all unknown service lines which can lead to improved public health protection such as the replacement of an LSL. The EPA notes that these systems would be required to start standard monitoring on the compliance date if their most recent 90th percentile level exceeds 0.010 mg/L (§ 141.86(c)(2)(ii)).

Allowing systems with unknowns to focus on developing their inventory can result in greater public health benefits by prioritizing the investigation of unknowns, which could lead to the identification of lead and/or GRR service lines. Additionally, the final LCRI, under § 141.86(c)(2)(iii)(H), requires that if a system identifies a lead or GRR service line at any time, it is required to conduct standard monitoring in the next six-month tap sampling period. Therefore, systems cannot avoid standard monitoring by postponing development of their service line materials inventory. If a system identifies a lead and/or GRR service line in its inventory, it must sample at the highest tiered sites according to the final LCRI's revised tiering and tap sampling protocols until all lead and GRR service lines are replaced. Water systems without lead or GRR service lines in their inventory must start standard monitoring if they subsequently discover a lead or GRR service line in the distribution system, unless the system replaces all the identified service lines prior to the start of the next tap monitoring period. If a system can replace those service lines prior to the next tap monitoring period, it would be a system with no lead and/or GRR service lines and therefore, would not need to start standard monitoring. The EPA does not anticipate that this requirement will disincentivize water systems from developing their inventory in order to avoid standard monitoring. Because the service line replacement pool includes unknowns, water systems are strongly incentivized to investigate the material of unknowns to reduce the annual number of replacements they must conduct (*i.e.,* where unknowns are determined to be non-lead). Additionally, the identification of unknowns as non-lead service lines can reduce system burden in other rule areas, such as providing annual public education to persons served by unknown service lines and risk mitigation measures following service line disturbance.

Systems on reduced monitoring that are not required to start standard monitoring at the first six-month tap sampling period following the LCRI compliance date will continue reduced monitoring in accordance with the requirements of the LCRI. Systems that do not meet the reduced monitoring criteria, including measuring 90th percentile lead and copper levels at or below the action levels of 0.010 mg/L and 1.3 mg/L, respectively, in the tap sampling period prior to the compliance

date, must begin standard monitoring at the first six-month monitoring period following the LCRI compliance date. Nearly all systems, except some systems on a nine-year waiver, will conduct their first tap monitoring period under the rule within three years of the compliance date. In contrast, systems not in compliance with the requirements of § 141.86(c)(2)(i), or in exceedance of the action levels under the LCRI at the compliance date, will begin their first tap monitoring period in January or July following the compliance date, whichever is sooner. The EPA encourages States to adopt LCRI sampling requirements prior to the compliance date to assist systems with implementing the new requirements and reducing the number of systems required to start or continue standard monitoring at the same time.

The EPA does not agree that all systems need to begin conducting standard monitoring following promulgation of the LCRI, whether soon after promulgation or phased in over a few years. The purpose of the requirement for some systems to begin conducting standard monitoring as soon as possible after the compliance date is so that systems with the highest risk of lead in drinking water can determine, under updated sampling and tiering requirements, whether they have exceeded the action level under the LCRI and must conduct additional actions to prevent lead exposure and protect public health. Systems without lead and/or GRR service lines in their inventory at the compliance date represent systems with a lower risk and therefore, are not required to change their monitoring frequency at the compliance date unless they do not qualify for reduced monitoring. Systems may still be required to begin conducting standard monitoring following the compliance date if they meet any of the criteria in § 141.86(c)(2)(iii) or if they exceed the lead or copper action level under the LCRI in the tap monitoring period immediately preceding or on the compliance date according to § 141.86(c)(2)(ii). The EPA added the requirement at § 141.86(c)(2)(ii), and maintained the provision at § 141.86(c)(2)(iii)(A) to require systems exceeding the lead or copper action level to begin standard monitoring. The EPA considers 90th percentile levels as current until the next 90th percentile is calculated following a subsequent tap sampling period. Thus, under the LCRI, systems with their most recent 90th percentile lead values that exceed 0.010 mg/L will be required to begin standard monitoring upon the compliance date. The addition at § 141.86(c)(2)(ii) clarifies that this requirement applies to all systems using their most recent 90th percentile lead levels.

The EPA disagrees with suggestions made by commenters to stagger or postpone the requirement for some systems, as summarized above, to conduct standard monitoring following the compliance date because the suggestions offered would either require additional State burden to track changing monitoring frequencies for several years following compliance or would not prioritize systems with the highest risk of lead in drinking water. The EPA considered suggestions to stagger requirements to begin standard monitoring following the compliance date by system size or by 90th percentile lead level and the agency does not anticipate that the solutions offered would substantially reduce administrative burden or enhance public protection for systems as part of the CCT or public education. Further, the EPA determined that staggering by 90th percentile lead level is not dissimilar from sampling requirements triggered by the lead action level where systems with high 90th percentile lead levels would already be required to conduct standard monitoring. Therefore, staggering by 90th percentile lead level captures systems that are already likely to sample at a higher frequency due to their 90th percentile levels. Instead, the EPA selected a solution for requiring systems to return to standard monitoring that would also capture systems that measure low levels of lead under the LCR but have known sources of lead in the form of lead and/or GRR service lines. Thus, the EPA is finalizing the approach to require systems with lead and galvanized requiring replacement service lines in their inventory at the LCRI compliance date to conduct standard monitoring, and for other systems to otherwise monitor in accordance with the requirements of the LCRI.

Some commenters expressed concern that it is infeasible to require systems to begin standard monitoring at the same time because States will have to review too many site sample plans at the same time. The EPA disagrees with the commenters' interpretation of the proposed and now final requirement for States to review site sample plans. In the preamble to the 2021 LCRR, the EPA indicated that States could review and approve site sample plans that include locations and tiering criteria of sites identified for sampling (USEPA, 2021a). While systems must submit site sample plans to the State (§ 141.90(a)(1)(i)) under the final LCRI, States do not have to review and approve them. For the final LCRI, the EPA is clarifying that States nonetheless may review and approve site plans; however, they do not have to do so prior to a system's first tap sampling period after the compliance date. Though States are not required to review site sample plans, States are required to review similar information on sample locations and tiering criteria after systems have completed sampling. At the end of each tap sampling period, systems must submit the results of sampling along with documentation of the location of each site and information to support the site selection according to tiering criteria (§ 141.90(a)(2)(i)). This is the same information as required in the site sample plan under § 141.90(a)(1)(i). States may, at their discretion and at a time of their choosing, review site selection criteria in the site sample plans to assist system compliance with tap sampling requirements. The EPA encourages States to prioritize review of these plans to ensure and support compliance with the tap sampling requirements. The LCRI incorporates requirements from the 2021 LCRR for States to require changes to the site sample plan, including the authority to specify sites for compliance tap sampling (§ 141.86(a)(1)).

f. 90th Percentile Value Calculation and Inclusion of Additional Samples

The EPA requested comment on the potential inclusion of samples from lower-priority tiers (*i.e.,* Tiers 3 through 5) that have a higher lead or copper concentration than samples from Tier 1 and Tier 2 sites for calculating the 90th percentile value for systems that do not have a sufficient number of samples from Tier 1 and 2 sites to meet the minimum number of samples required. The EPA received a range of comments. Some supported the proposed approach to include the highest samples from lower tiers and others suggested the samples with the highest lead and copper concentrations be included regardless of tier.

Additionally, the EPA requested comment and any relevant data on the number and tiering of samples used to calculate the 90th percentile lead and/or copper levels for systems with LSLs for purposes of assessing the effectiveness of CCT. Specifically, whether samples from non-lead service line sites that have higher lead concentrations than samples from LSL sites should be included and whether these higher values should replace lower values from LSL sites in the 90th percentile calculation, including at systems that are collecting compliance

samples from all Tier 1 and 2 sites. The EPA received a range of comments, with some requesting that the highest samples be included regardless of tier, and other comments asking for Tiers 1 and 2 to be prioritized. Some commenters specified that the compliance samples with the highest lead and copper concentrations should be considered, while others did not specify the specific type of samples (*e.g.,* compliance, consumer-requested) that should be included as part of the 90th percentile calculation. The EPA received a suggestion to consider all samples collected regardless of tier, including consumer-requested samples, and for systems to calculate the 90th percentile based on the highest samples equal in number to the minimum number required in all cases. The commenters noted such an approach would take the strictest stance on preventing the 90th percentile from being diluted due to samples with lower lead concentrations.

The EPA also received recommendations that additional samples should have limited inclusion in the 90th percentile calculation, including recommending that additional samples only be included when they are consumer-requested samples that meet the same tiering and protocol requirements as compliance samples. Some commenters were concerned about the potential for these additional samples to alter the system's compliance dataset because they would not necessarily be included in the sites identified in the site sample plan. Some commenters stated that including additional samples that were not collected for compliance in the 90th percentile calculation would assess the highest levels of lead regardless of cause, and may not represent CCT performance, especially if samples would be included without consideration of tiering priorities.

Additional concerns raised by commenters included the potential to include duplicate samples from sites sampled multiple times in a sampling period, and the potential for additional samples to be geographically clustered. Some commenters had concerns that systems would reduce voluntary supplemental monitoring programs if the sample results would potentially be included in their 90th percentile calculation, with a suggestion that systems only include additional samples up to the minimum number of required samples. Other commenters stated concerns over the applicability of samples to assess CCT if they are collected within other sampling programs, including voluntary programs conducted by systems, and particularly if those programs are not designed to take compliance samples and may not have information on site tiering. Lastly, the EPA received comments that the proposed rule was unclear about which additional samples can and cannot be included in the 90th percentile calculation.

The EPA agrees that Tiers 1 and 2 represent the highest risk of lead in drinking water. The EPA uses tiering to prioritize sites selected for tap sampling according to the likelihood of having elevated lead levels based on the presence of service lines and plumbing materials most likely to contribute lead to drinking water. Therefore, tiering supports public health protection under SDWA by capturing the highest levels of lead typically at the tap, which in turn indicate the need to assess the effectiveness of CCT in order to maximize reducing exposure of lead in drinking water and inform next steps to control lead releases. The EPA agrees that water systems should not be allowed to ''dilute'' the 90th percentile with compliance samples from lower-priority tiers when a system does not have enough Tier 1 and 2 sites to meet the minimum number of required samples. The EPA also did not receive any data during public comment to support the inclusion of all samples from lower tiers that, though unlikely, have higher lead levels than higher tier sites for the purposes of assessing CCT. The final LCRI, the EPA is maintaining the proposed approach to require water systems to use samples from Tiers 1, 2, and from the next higher available tier (*i.e.,* Tier 3, 4, or 5) only up to the minimum number of required samples. The EPA agrees that a high lead value indicates a public health risk regardless of tier and individual sites with a lead result above 0.010 mg/L require the system to investigate the site as part of Distribution System and Site Assessment (see section IV.H of this preamble).

The EPA notes CCT is also assessed at each individual site with a lead result above 0.010 mg/L, including at lower or unknown tiers, under the rule's Distribution System and Site Assessment requirements See section IV.H of this preamble for more details. All sampling results must be submitted to the State, regardless of whether the sample is used in the 90th percentile value calculation. The State has the authority to take action, including re-evaluation of approved OCCT, as a result of high lead values resulting from consumer-requested sampling.

The EPA also agrees that the proposed 90th percentile calculation is complex because water systems, or the State, will be required to separate out the Tier 1 and 2 samples and identify only the samples with the highest lead and copper concentrations from the next highest tier (*i.e.,* Tier 3, 4, and 5) in order to meet the minimum required number of samples. The EPA has simplified the 90th percentile value calculation procedure for systems with insufficient Tier 1 and 2 sites to meet the minimum number required. For the final LCRI, systems must include samples from each tier at which the system conducted compliance sampling. Then, systems must use the highest samples from among those samples equal to the minimum number of samples required to calculate the 90th percentile. While the EPA anticipates in many cases that this approach will not yield different results than what the EPA proposed because of the higher likelihood of lead in samples collected at Tier 1 and 2 sites, the EPA is making this change in the final LCRI to simplify the calculation and streamline the rule in response to comments. For the final LCRI, the EPA also clarified how systems that sample at a mix of Tiers 1 and 2 and lower tiered sites (*i.e.,* Tiers 3, 4, and 5) but do not sample at enough sites to meet the minimum number required can still calculate 90th percentile values. While systems that do not sample at the minimum number of sites required are in violation of the rule, systems must calculate 90th percentile values from the samples collected in order to prevent systems from avoiding an action level exceedance by undersampling. Systems with less than the minimum number of samples must calculate their 90th percentile values based on the total number of samples, rather than the minimum number of samples required (§ 141.80(c)(3)(iii)(G)). This calculation is the same as one that is used for systems sampling only at Tiers 3 through 5 sites.

The EPA disagrees with restricting the number of samples that can be used to calculate the 90th percentile in situations where systems have sufficient Tier 1 and 2 sites to meet the minimum number of samples and are collecting compliance samples at those sites. The EPA also disagrees with requiring water systems to use the highest tap samples regardless of tier to calculate the 90th percentile for systems in those situations. The EPA introduced the tiering criteria to prioritize sampling at sites most likely to contain lead and does not anticipate that there will be many instances where systems have samples from lower priority tiered sites

with higher lead results than those at Tier 1 and 2 sites. In the 2021 LCRR, the EPA expanded tiering from three tiers to five tiers in order to make lead service lines the highest priority and to help prioritize sampling at the highest risk lead sources when systems do not have lead service lines (86 FR 4225, USEPA, 2021a). Tiers 1 and 2 represent sites with lead sources that, when present, have the greatest contribution to lead in drinking water. See section IV.E.2.b of this preamble for additional discussion on the prioritization of sites within each tier. The EPA acknowledges concerns that water systems may collect additional samples in efforts to dilute the 90th percentile level but disagrees with prohibiting systems from using more than the minimum number of required samples when a system is sampling at sites within the same tier. Additional samples collected within the same priority tier do not represent dilution because they share the same likelihood of lead contributions. Rather, additional data that meets the tiering and sampling protocol requirements can provide better systems-wide assessment of CCT performance at those sites. The EPA notes that water systems are not permitted to collect compliance samples from a lower tier if the system has sufficient number of sites at a higher tier under § 141.86(a). For example, a system with enough Tier 1 and 2 sites to meet the minimum number of samples required may not collect samples from lower-priority tiered sites for inclusion in the 90th percentile calculation. This is to ensure that water systems prioritize sampling from higher tier sites while sites remain available and prevents diluting the 90th percentile by including samples from lower tiers that are likely to have lower lead concentrations. The EPA is only limiting the number of samples used for the 90th percentile calculation in the situation where a system does not have enough Tier 1 and 2 sites to meet the required minimum number of samples to limit the dilution of the 90th percentile calculation when a system has a mix of samples from lead service line sites and lower tiered sites. The EPA is also not limiting the number of samples used for the 90th percentile calculation in the situation where a system is collecting all compliance samples at sites in Tiers 3 through 5 but the agency notes as described in the regulatory text under § 141.86(a) water systems must prioritize compliance sampling at the highest tier available. For example, for a water system to use Tier 4 sites it must have an insufficient number of Tier 1 through 3 sites. A CWS with insufficient Tier 1, Tier 2, and Tier 3 sampling sites shall complete its sampling pool with ''Tier 4 sampling sites''.

As noted above, some commenters were unclear whether the rule requires systems to include consumer-requested samples as part of the 90th percentile calculation, particularly if the samples do not match the tier of compliance samples. The EPA agrees with commenters that consumer-requested sampling is conducted for public education purposes and are not required to use the same protocol as required for compliance sampling nor collected according to the site sample plan. Water systems develop site sampling plans to ensure compliance sample sites meet the tiering criteria and to maintain consistency in sample site locations that meet the required tiers between sampling periods. The EPA is concerned that requiring water systems to include consumer-requested samples regardless of tier will make it more difficult for water systems and States to verify that sampling tiering and protocol were accurately followed, and that lack of consistency in sample sites used for the 90th percentile calculations may make it more difficult for water systems to identify potential issues with CCT. Therefore, the EPA is finalizing the proposed requirement for consumer-requested samples to be included in the 90th percentile calculation only if the sampling meets the compliance sampling tiering and protocol.

In the final LCRI, systems are required to offer sampling to any site with a lead or GRR service line (§ 141.85(c)(2)), and to offer lead sampling to any site, regardless of service line material type, following a lead action level exceedance (ALE) (§ 141.85(c)(1)). These sample results may produce additional valuable information regarding CCT performance as well as provide consumers with information about lead in drinking water. The EPA agrees that any samples that do not meet the same criteria as compliance samples collected in accordance with § 141.86(a) and (b) should not be included in the 90th percentile calculation as it may dilute the 90th percentile level, but disagrees that all consumer-requested samples should be excluded. Samples that meet the same tier and protocol as the required compliance samples offer additional information to water systems to evaluate CCT performance at those sites and must be included in the 90th percentile calculation (§ 141.86(e)). The EPA also disagrees that these requirements will disincentivize voluntary programs. The EPA is aware that systems may offer sampling under different protocols (*e.g.,* sequential sampling) to provide consumers with information about lead in their drinking water. The EPA clarified in the final LCRI at § 141.86(b)(1)(iv) that systems have flexibility to use alternate sampling protocols for consumer-requested samples. Consumer-requested sampling in accordance with § 141.85(c) maintains flexibility but specifies that water systems sampling at lead service line sites must offer samples that capture water in contact with both the lead service line and the premise plumbing. Systems may choose to use the standard compliance sampling protocol for consumer-requested samples for ease of implementation (*e.g.,* one set of sampling instructions) and to address challenges with identifying enough participation in compliance sampling to obtain the minimum number of required samples. Alternatively, water systems may choose to devise alternate protocols to assess site-specific water quality issues. However, samples collected in accordance with § 141.85(c) that do not meet the appropriate tier and protocol requirements of § 141.86(a) and (b) may not be included in the 90th percentile calculation in accordance with § 141.86(e). See section IV.J of this preamble for more information on requirements for consumer-requested samples. When multiple samples that meet the standard compliance tap sampling requirements are collected from the same site during a tap sampling period, the EPA agrees including each of these in the 90th percentile calculation can result in an inaccurate reflection of CCT performance. In the final rule, only the highest sample reading from that site can be included in the 90th percentile calculation (§ 141.86(e)).

g. Wide-Mouth Bottles

The EPA requested comment on the proposed updated definition of wide-mouth bottles, that is ''bottles that are one liter in volume with a mouth, whose outer diameter measures at least 55 millimeter wide,'' and specifically on the availability of qualifying bottles. The EPA received comments noting concern that the definition of wide-mouth bottles with a minimum of 55 millimeter outer diameter is too restrictive based on the sizes of one-liter bottles available commercially. Commenters suggested that a 40 millimeter inner diameter is more representative of commercially available bottles, given that suppliers typically categorize products by the inner diameter of the opening, and is still sufficient to maintain the benefits of

collecting samples in a wide-mouth bottle. The EPA agrees that the definition of a wide-mouth bottle should describe items that are readily and commercially available to systems and revised the definition of wide-mouth bottles for the final LCRI to include an inner diameter that measures at least 40 millimeter diameter. The EPA also anticipates that this change to accommodate commercial availability of wide mouth bottles, per commenters' concerns, will not impact the functionality of wide-mouth bottles to allow for sample collection with the tap fully open. The EPA also heard concern that restricting other characteristics of the sample bottle, such as size, shape, color, and material, reduces options for systems to creatively develop customer sampling solutions around the more complex first- and-fifth-liter paired sample protocol. The EPA confirms that there is no restriction on bottle size, shape, color, or material aside from being one liter in volume with a mouth measuring a minimum of 40 millimeter inner diameter.

h. Sample Invalidation

The EPA received comments supporting revisions that allow the State to invalidate samples not collected in accordance with requirements. Commenters asked that the invalidation authority be expanded, such as to include samples incorrectly collected from sites with point-of-use or point-of-entry devices. The EPA agrees that sites with point-of-use or point-of-entry devices are not suitable for compliance tap sampling and has revised the final rule to allow States to invalidate based on any site selection criteria in § 141.86(a). When information on site characteristics includes information that a point-of-use or point-of-entry device is installed, States may use that information to determine whether the sample is invalid. A site with a point-of-use or point-of-entry device may be eligible for sampling under Tier 5, such as when the site is representative of other sites in the system and the system has no sites in Tiers 1–4. The final rule gives States the authority to invalidate samples based on any site selection criteria under § 141.86(a), and finalizes proposed language to give States additional authority for invalidation based on sample collection criteria under § 141.86(b)(1), including minimum stagnation time and sample volume.

Additionally, the EPA requested comment and data, including modeling and sampling data, on potential maximum stagnation times, and specifically how stagnation times inform corrosion rates. Many commenters suggested setting a maximum time for stagnation under sample collection criteria, beyond which samples could be invalidated. Commenters did not offer data to support a scientific reason for any suggested maximum stagnation times provided in their comment. One commenter advocated against setting a maximum time for stagnation since stagnant water may still be used for human consumption and thus represents water delivered under the control of systems. The EPA clarifies that systems have the authority to review sample collection criteria as reported by consumers, and to request replacement samples if the system believes that the sample is not representative of water in the distribution system. However, systems may not challenge samples after they have been sent for analysis. This provision prevents systems from targeting samples with high lead and copper readings to submit for invalidation.

The EPA received comments requesting the EPA extend the time allowed for acidification of samples following sample collection. Commenters expressed that there is no scientific difference with respect to sample analysis between acidification after two weeks and acidification after four weeks and noted extending the acidification window would allow systems to batch more samples and process them more efficiently. The EPA did not receive data in support of these comments to consider an extended acidification window and is not aware of data that would support such a change. Therefore, the EPA is unable to assess the validity of these comments and is not amending the proposed LCRI requirements for the time for sample acidification.

i. Practical Quantitation Limit

The EPA received comments on the lead PQL suggesting that the EPA should consider lowering the lead PQL from 0.005 mg/L. Many of these commenters suggested lowering the lead PQL to 0.001 mg/L, the current lead MDL in the LCRI. These commenters presented studies of individual labs demonstrating the use of an EPA method able to achieve MDLs below the 0.005 mg/L lead PQL.

The EPA disagrees with lowering the lead PQL below the level of 0.005 mg/L. As discussed in the proposed LCRI, due to the lack of national-scale data demonstrating lead MDLs at levels significantly lower than the current MDL of 0.001 mg/l, there is not enough scientific evidence to lower the PQL. Compared to the PQL, the MDL is the minimum measured concentration of a substance that can be reported with 99 percent confidence that the measured concentration is distinguishable from method blank results (§ 136.2(f)). The current lead PQL is based on the approved MDLs of the analytical methods for lead detection in § 141.23(k)(1). Based on these methods, the EPA established the MDL for lead as 0.001 mg/L in § 141.89(a)(1)(iii), and the PQL is established with a margin of error around demonstrated MDLs. The EPA is not aware of sufficient evidence to show the widespread analytical capability of laboratories for lower MDLs. Additionally, the commenters arguing for a lower PQL did not provide the EPA with national scale date that demonstrates widespread analytical capability for lower MDLs, so the EPA is retaining the requirement for the lead PQL at 0.005 mg/L.

3. Final Rule Requirements

a. First- and Fifth-Liter Sampling

The final LCRI requires water systems to take first- and fifth-liter paired samples for lead at LSL sites (§ 141.86(b)) and use the higher of the two values to calculate the 90th percentile lead level (§ 141.80(c)(ii)(A) and § 141.80(c)(iii)(A)). For sites that are Tier 1 or Tier 2 because they have lead premise plumbing only and no LSLs, only the first liter must be sampled. The final rule maintains that systems continue to collect first-liter samples at Tiers 3, 4, and 5 sites.

b. Tiering of Sampling Sites

For LCRI, the EPA is finalizing the tiers for sampling sites as proposed with minor modifications (§ 141.86(a)(4)). Tier 1 sampling sites are single-family structures with either premise plumbing made of lead and/or are served by an LSL. Tier 2 sampling sites are buildings, including multiple-family residences, with premise plumbing made of lead and/or served by an LSL. The rule promulgates corrections to Tiers 1 and 2 that were inadvertently dropped from the 2021 LCRR, such that lead premise plumbing is included in Tiers 1 and 2. Tier 3 sampling sites are sites that are served by a lead connector. Tier 3 sites are also sites served by a galvanized service line or containing galvanized premise plumbing that are identified as ever having been downstream of an LSL. Tier 3 for community water systems only includes single-family structures.

Tier 4 sampling sites are sites that contain copper premise plumbing with lead solder installed before the effective

date of the State's applicable lead ban. Tier 4 for community water systems only includes single-family structures. Tier 5 sampling sites are sites that are representative of sites throughout the distribution system. For purpose of § 141.86(a), a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

c. Sample Site Selection

Under the final LCRI, each water system must identify potential tap sampling sites and submit a site sample plan to the State by the start of the system's first lead and copper tap monitoring period (§ 141.90(a)(1)(i)). States have the authority to require systems to modify site sample plans or use specific sampling sites (see section IV.N of this preamble on reporting for additional details). The EPA encourages States to evaluate site sample plans prior to the start of a systems' tap sampling period to ensure site locations meet the requirements of the LCRI.

Water systems must select sampling sites from the highest tier available as described above in accordance with § 141.86(a). The final rule continues to require systems to sample at the same sites between tap monitoring periods. The final rule removes the requirement to select replacement sample sites within reasonable proximity when systems are unable to access previously sampled sites to provide more flexibility for systems and in recognition of the difficulty in selecting similar sites while service line replacement is underway.

In the final rule, the EPA is also clarifying that sample sites are no longer available for sampling following either a customer refusal for participation or customer non-response after a system conducts two outreach attempts. The number of customer refusals for compliance sampling must be submitted to the State. These requirements will enable systems, particularly those required to conduct 100 percent of samples at sites served by LSL or with lead premise plumbing under § 141.86(a)(3), to move on to subsequent tiers once all potential sites in a higher tier are unavailable. Systems that expect to be short of sites in a particular tier may commence sampling at lower tiers to meet the minimum number of required samples by the reporting deadline. Systems must document reasons for site unavailability when they are not included in the compliance dataset and they were not previously documented as unavailable, such as for LSL sites that must be sampled under § 141.86(a)(3).

d. Frequency and Quantity of Sampling

With the elimination of the trigger level in the final rule, the EPA is finalizing the revised tap sampling frequency requirements as proposed (§ 141.86(c) and (d)). Any system that is at or below the lead action level of 0.010 mg/L and copper action level of 1.3 mg/L for two consecutive six-month tap monitoring periods qualifies for annual reduced monitoring. Any system that meets the lead PQL of 0.005 mg/L and copper PQL of 0.65 mg/L for two consecutive tap monitoring periods qualifies for triennial reduced monitoring. Small and medium systems that meet the action level for three consecutive years (which may include a combination of standard and annual reduced monitoring) qualify for triennial reduced monitoring. The LCRI does not include any changes to the nine-year reduced monitoring waiver, nor any changes to the minimum number of sample sites required under standard and reduced monitoring.

e. Standard Monitoring

In the final rule, systems with lead or GRR service lines in their inventory on the LCRI compliance date must begin standard monitoring in the first six-month tap monitoring period after the compliance date, unless they adopt tap sampling protocols according to the final LCRI prior to the compliance date. Specifically, systems with lead and GRR service lines do not need to begin standard monitoring if they conduct sampling meeting the tap sampling protocol including the first- and fifth-liter sampling protocol at sites served by LSLs as described in § 141.86(b)(1)(ii), all sample collection requirements in § 141.86(b)(1) and (3) (such as stagnation times and sample volume), and priority tiering requirements to sample at sites served by lead and GRR service lines as described in § 141.86(a). Since there are no substantive changes to the sampling protocol and tiering criteria for systems with service lines of unknown material and/or non-lead service lines, these systems are not required to begin standard monitoring in the first full tap monitoring period after the compliance date, unless required to begin standard monitoring under other rule provisions such as exceeding the action level or changing source water or treatment. If later, these systems discover lead and/or GRR service lines in their distribution system (unless the system replaces all the discovered service lines prior to the start of the next tap monitoring period), or otherwise meet any of the criteria in § 141.86(c)(2)(iii)(H), they must begin standard monitoring.

The final rule's requirement to begin standard monitoring is similar to the requirement under the 2021 LCRR that all systems with lead or GRR service lines must begin standard monitoring immediately following the compliance date. The LCRI clarifies that if systems with known lead and/or GRR service lines conduct monitoring meeting the new tap sampling protocol requirements (first- and fifth-liter sampling, all sample collection requirements in § 141.86(b)(1) and (3), and priority tiering requirements of the LCRI) prior to the compliance date, they do not need to begin standard monitoring, unless their most recent 90th percentile lead and/or copper results exceed the action level. The EPA is aware of some systems, such as in Michigan, that may meet these requirements prior to the compliance date. The agency encourages all systems and States to consider early adoption of these requirements to help systems determine their 90th percentile levels under the LCRI requirements as soon as possible and to reduce the number of systems beginning standard monitoring upon the compliance date. These requirements are critical to ensuring that systems with known sources of lead in drinking water can determine as soon as practicable following the compliance date whether additional actions are needed to address situations with a higher potential of lead exposures faced by consumers.

To continue on reduced monitoring, systems must meet the criteria in § 141.86(d) based on 90th percentile lead and copper levels at or below the lead and copper action levels and/or the lead and copper PQLs. As the final LCRI lowers the lead action level to 0.010 mg/L, systems with 90th percentile lead levels above 0.010 mg/L during the tap sampling period prior to the compliance date will not be able to continue on reduced monitoring and must conduct standard monitoring in the first full tap monitoring period following the compliance date. This requirement is also clarified under § 141.86(c)(2)(ii) which requires all systems with a most recent 90th percentile lead level above 0.010 mg/L or a most recent 90th percentile copper level above 1.3 mg/L to begin standard monitoring at the compliance date.

The final LCRI also requires an update to the cross-reference under § 141.83(a)(4) regarding the requirement for systems to conduct standard monitoring following installation of source water treatment under § 141.86(c)(2)(iii)(F), due to the

revisions to this section, specifically the order of the requirements.

f. 90th Percentile Value Calculation and Inclusion of Additional Samples

For systems with a sufficient number of Tier 1 and 2 sites to meet the minimum number required, systems must only use samples collected at Tier 1 and 2 sites to calculate the 90th percentile (§ 141.80(c)(3)(ii)). These systems may not include samples from Tier 3, 4, or 5. For systems sampling at Tier 1 and 2 sites that do not have sufficient Tier 1 and 2 sites to meet the minimum required number of samples, systems must calculate the 90th percentile concentration using the highest samples from the highest tiers with available sampling sites equal to the minimum number of samples required (§ 141.80(c)(3)(iii)). For systems only sampling at Tier 3 through 5 sites, they must calculate the 90th percentile value using samples collected at the highest tiers with available sampling sites from Tiers 3 through 5 (§ 141.80(c)(3)(i)).

The EPA is clarifying in the final LCRI that additional samples collected according to the requirements for compliance samples described in § 141.86(a) and (b), must be considered for determinations, such as calculating the 90th percentile. The final LCRI requires systems (or States) to use consumer-requested samples (§ 141.85(c)) that meet the requirements of § 141.86(a) and (b) to calculate the system's 90th percentile level. Systems may collect consumer-requested samples according to different protocols than what is required for lead and copper compliance samples in § 141.86(b). However, only consumer-requested samples collected in accordance with the requirements of § 141.86(a) and (b) may be used in the 90th percentile calculation. Systems may not include samples collected as part of DSSA (see section IV.H of this preamble) or follow-up samples collected as a result of monitoring after service line replacement (see section IV.B of this preamble) in the 90th percentile calculation.

The EPA recognizes that requirements for systems to offer consumer-requested sampling may result in sampling at sites more than once during a tap sampling period. The final rule adds a requirement that systems are required to include only the highest sample from among all those collected at a site during the same tap sampling period that also meets the requirements for a compliance sample (§ 141.86(e)).

g. Wide-Mouth Bottles

In response to comments provided during the public comment period, for the final LCRI, the EPA is revising the definition of wide-mouth bottle to reduce the minimum ''inner diameter'' from 55 to 40 millimeters. See section IV.O.3 of this preamble for further discussion on definitions.

h. Sample Invalidation

The final LCRI includes specific language providing States opportunities to invalidate samples which were collected in a manner that did not meet the sample collection criteria under § 141.86(b)(1). The final LCRI also includes revised language to allow States to invalidate samples based on any incorrect site selection criteria under § 141.86(a), including samples collected incorrectly at sites with installed point-of-use and/or point-of-entry devices. In addition, systems may make determinations for resampling on a site-by-site basis, prior to submitting samples for analysis, for when samples are not representative of regular water usage.

i. Practical Quantitation Limit

The final LCRI retains the lead PQL of 0.005 mg/L.

F. Corrosion Control Treatment

1. Rationale and Proposed LCRI Revisions

a. Feasibility of the CCT Treatment Technique

CCT refers to methods (*e.g.,* alkalinity/pH adjustment, addition of corrosion inhibitors) that water systems can take to reduce the leaching of lead and copper into drinking water from drinking water infrastructure, such as service lines and premise plumbing. CCT is one of the four treatment techniques the EPA promulgated in the LCR. At § 141.2, OCCT is defined as the ''corrosion control treatment that minimizes the lead and copper concentrations at users' taps while ensuring that the treatment does not cause the water system to violate any national primary drinking water regulations.'' In the LCR, the EPA stated that CCT was an ''important element of the final treatment technique [rule]'' because ''most of the lead and copper found in drinking water is caused by corrosion of materials containing lead and copper in the distribution system and in the plumbing systems of privately owned buildings'' (56 FR 26479, USEPA, 1991). After examining the data available at the time on the effectiveness of corrosion control treatment on reducing lead in tap water, the use of corrosion control treatment in full-scale systems, and the cost of these technologies to large water systems, the EPA concluded in the LCR that this treatment technology is feasible within the meaning of section 1412(b)(5) of SDWA (56 FR 26486, USEPA, 1991). For the LCRI, the EPA evaluated the feasibility of the CCT treatment technique in accordance with SDWA sections 1412(b)(4)(D) and 1412(b)(7) and as described in section III.D.3 of this preamble and finds CCT to be effective, affordable for large systems, technically feasible, and prevents known or anticipated health effects to the extent feasible.

First, the EPA found that CCT is effective and available for use. The EPA determined in the 1991 LCR that available data demonstrated the effectiveness of CCT for reducing lead and copper at the tap. The EPA also acknowledged the challenge of quantifying the effectiveness of CCT in terms of developing a single numeric value or specific level of treatment that is feasible for all water systems (see section IV.A of this preamble). This is in part due to water system-specific characteristics including the physical and chemical properties of the source water, the material composition of the distribution system, lead and copper content of premise plumbing, consumer water use habits, and other factors. In addition, the EPA determined that CCT had been used in water distribution systems for many years demonstrating its efficacy under field conditions (56 FR 26485–26486, USEPA, 1991). CCT also continues to be a ''best technology, treatment technique[s] or other means'' for use by water systems in accordance with the definition for feasibility at SDWA section 1412(b)(4)(D). As noted in the LCRI proposal, based on many years of implementation of the LCR with thousands of PWSs utilizing corrosion control strategies, the EPA determined that these treatments are still effective at reducing lead and copper levels at the tap (88 FR 84937, USEPA, 2023a). Additionally, the EPA identified research which continues to show that CCT effectively reduces lead and copper from leaching into drinking water (Hayes and Hydes, 2012; Roy and Edwards, 2020; Tam and Elefsiniotis, 2009; Vijayashanthar et al., 2023). For example, an estimated 99 percent of water systems serving more than 50,000 persons currently use CCT (chapter 3, Exhibits 3–6 and 3–7, USEPA, 2024a). Therefore, CCT is an effective treatment technique in accordance with SDWA section 1412(b)(4)(D).

Second, the EPA determined in 1991 that CCT was affordable because the

costs of alkalinity adjustment, pH adjustment, and the addition of corrosion inhibitors were reasonable for large water systems (56 FR 26485–26486, USEPA, 1991). Although not required for determining what may reasonably be afforded by large water systems to meet the feasibility standard for CCT as a treatment technique at SDWA section 1412(b)(7)(A) (see section III.D.3 of this preamble), the EPA later evaluated the affordability of compliance technologies for small systems in accordance with the 1996 amendments to SDWA and determined that CCT is affordable for all system sizes (63 FR 42039, USEPA, 1998a; USEPA, 1998b). For the LCRI, the EPA continues to find CCT affordable. In addition, the EPA evaluated the cumulative impact of the LCRI requirements as a whole to household costs by system size, which are discussed in the EPA's ''Economic Analysis for the Final Lead and Copper Rule Improvements'' (USEPA, 2024a) in section 4.3.7.3 of this preamble.

Third, the EPA has determined CCT is technically feasible. There are several factors the agency considered to assess technical feasibility for systems to implement CCT in accordance with SDWA. This includes considering the capacity of systems to evaluate and implement CCT. As discussed above, CCT has been shown to be a best available treatment technique, effective at reducing lead and copper in drinking water. The EPA notes that water systems of all sizes have implemented CCT under the 1991 LCR (USEPA, 2024a, chapter 3, section 3.3.3). However, there are technical challenges for water systems with regard to CCT that the agency considered when developing CCT requirements for the 1991 LCR and in the final LCRI that affect technical feasibility. As described in the proposal, CCT expertise is highly technical because corrosion chemistry is complex and theoretical predictions are rarely sufficient to fully understand treatment performance in a system (Tully et al., 2019; 88 FR 84942, USEPA, 2023a). This is because unlike technologies used to treat source water contaminants, the use of corrosion control technologies does not remove the contaminants, such as lead and copper, from drinking water directly; instead, these treatment technologies prevent these contaminants from being introduced into drinking water by corrosion of plumbing materials. As discussed in section IV.A of this preamble, factors such as the amount of lead or copper in the distribution system and premise plumbing, water chemistry, stagnation time, and water use patterns result in variability of lead and copper levels at the tap. While the EPA determined that water systems can address water corrosivity by using corrosion control treatment, it is ''technologically infeasible to ascertain whether the lead and copper level at the tap at a single point in time represents effective application of the best available treatment technology'' (53 FR 31527, USEPA, 1988). In other words, corrosion control is system specific and there is no single numerical standard capable of adequately reflecting the application of the best available treatment in all systems. Lead and copper levels vary considerably both before and after the application of corrosion control treatment, between different systems, and between individual buildings within the same system (56 FR 26473–26475, USEPA, 1991). See section IV.A of this preamble for the EPA's analysis supporting setting a treatment technique for lead in lieu of an MCL. Because corrosion control treatment is system-specific, the unique factors of a system may pose particular challenges that require technical expertise including designing and conducting corrosion control studies and providing recommendations for treatment. Furthermore, as noted in the 1991 LCR, there are additional technical challenges of mitigating potential secondary effects of corrosion control treatment, including potential increased levels of disinfection byproducts and precipitation of other metals such as iron and manganese which may lead to a decrease in health protection (56 FR 26487, USEPA, 1991). Literature shows that these types of challenges continue to be a factor in applying CCT (*e.g.,* Schock et al., 2008).

In addition, the EPA is aware that some water systems may lack the expertise to design and implement CCT without assistance from outside technical experts and the State, particularly smaller water systems. These systems typically require the most extensive level of interaction with States with regards to evaluating, selecting, implementing, and overseeing OCCT. The burden on large systems is typically lower as they tend to be more sophisticated and generally require less technical support (56 FR 26492, USEPA, 1991). While larger systems serve the majority of the U.S. population, small systems comprise the vast majority of PWSs. Out of 66,947 CWSs and NTNCWSs subject to the requirements of the LCR, 62,518 (93 percent) serve 10,000 persons or fewer and 57,330 (86 percent) serve 3,300 persons or fewer (USEPA, 2024a, chapter 3, section 3.3.1). Therefore, because many smaller water systems often require additional technical assistance and oversight from the State to implement CCT, the capacity of States to provide such assistance affects the technical feasibility for systems. Additionally, as described in the LCRI proposal, the EPA is concerned about the lack of technical experts available nationally to assist water systems in planning for and implementing OCCT on an ongoing basis, which may otherwise alleviate some of the burden on water systems and States (88 FR 84942, USEPA, 2023a). Based on years of LCR implementation, the EPA is aware that water systems, particularly small systems, face these technical challenges.

Fourth, as discussed in section III.D.3 of this preamble, the EPA considered how the technical factors regarding technical feasibility above (*i.e.,* variability of lead in drinking water, system-specific nature of CCT, technical expertise, and capacity for States to provide assistance to smaller systems) affect the EPA's ability to establish requirements for the CCT treatment technique to ''prevent known or anticipated health effects to the extent feasible'' in accordance with SDWA section 1412(b)(7)(A). In the LCR, for the purposes of meeting the statutory feasibility standard for a treatment technique, the EPA considered the balance of these technical factors with ensuring the CCT treatment technique was the most health protective. The EPA also clarified in the proposed LCRI how the agency considered the technical factors, including administrative burden, in developing the CCT requirements.

In the LCR, and retained in the LCRI, as described below, the EPA developed action level and tap sampling requirements, among others, to make CCT feasible for water systems, consistent with SDWA section 1412(b)(7)(A). The action levels in particular address the technical feasibility challenges detailed above. In the LCR, the EPA introduced action levels for lead and copper to simplify implementation of the rule. Specifically, these action levels were introduced ''as a method to limit the number of PWSs that would need to complete a detailed demonstration that they have installed corrosion control treatment to minimize lead and/or copper levels at taps'' (56 FR 26488, USEPA, 1991). The EPA discussed in the proposed LCRI (88 FR 84906–84910, USEPA, 2023a) and reaffirms in section IV.A of this preamble, that the agency established a treatment technique rule for lead and

copper because it is not ''technologically feasible to ascertain the level of the contaminant'' (42 U.S.C. 300g–1(b)(7)(A)) at the tap. As noted above, it is not technically feasible or possible to determine a precise level of lead and copper at the tap that represents the application of best available treatment across systems, in part due to the specific characteristics of each system (*e.g.,* composition of the distribution system, presence of lead and copper in premise plumbing, physical and chemical water characteristics, consumer water use habits). Because the resulting lead and copper levels from application of the best available treatment is system specific, selection of the lead and copper action levels is not based on a precise statistical evaluation of treatment data for all systems. Instead, the action levels were selected based on the lead and copper levels in water systems with OCCT for the purpose of making the CCT treatment technique technically feasible (see section IV.F.4 of this preamble).

In the LCR, the EPA set the action levels for lead and copper at 0.015 mg/L and 1.3 mg/L, respectively. Because of the limitations of predicting CCT efficacy, tap sampling is necessary both before and after implementation of treatment to assess its performance (56 FR 26486, USEPA, 1991). Under the LCR, small and medium systems demonstrated they were optimized by measuring 90th percentile lead levels at or below the action level. The EPA used 90th percentile lead data from systems with OCCT to select the action level as a level the EPA determined was generally representative of what systems with OCCT were meeting. The EPA required large systems to conduct a detailed demonstration of OCCT regardless of 90th percentile levels because large systems served the greatest number of people and had ''the greatest technological capabilities and access to technical support and other resources that would enable them to perform the sophisticated treatment manipulations that might further reduce lead levels'' (56 FR 26492, USEPA, 1991). However, the EPA also acknowledged that some systems already at or below the action level (which was determined to be generally representative of OCCT) may not be able to reduce their lead levels further (56 FR 26492, USEPA, 1991) because of the system-specific nature of OCCT. Likewise, some systems may not be able to meet the action level even after installing OCCT, because of factors that lead to high lead variability at the tap (*e.g.,* water chemistry, composition and condition of the distribution system, lead content in plumbing materials). The action level is not a health-based number in that it is not established based on human health risks to lead, but rather is a tool to make the treatment technique feasible for systems. As a level that is generally representative of OCCT, the action level prompts a detailed OCCT demonstration for water systems (*e.g.,* conducting a study, treatment recommendation). However, whenever a system is required to conduct a detailed OCCT demonstration and installation, the system must identify and apply the best technology in their system in accordance with § 141.2, and not simply apply the treatment sufficient to meet a specified level. The action level supports the public health benefits that can be realized through CCT while addressing some of the technical feasibility challenges described above, by limiting the need for detailed optimization demonstrations for small and medium systems at or below the action level. This made ''implementation of the rule administratively workable'' (56 FR 26492, USEPA, 1991) and thus, CCT technologically possible compared to requiring small and medium systems to conduct detailed OCCT demonstrations regardless of their tap sampling results. Tap sampling is therefore used in conjunction with the action level to address this technical challenge.

The EPA is clarifying its statement in the LCRI proposal that the action level is used to ''ensure the rule is implementable for small and medium systems'' (88 FR 84940, USEPA, 2023a) as the action level also triggers actions for large systems. The EPA notes that while large systems were required to conduct a detailed demonstration of optimization since LCR, systems of any size with CCT, including large systems, use the action level to prompt installation or re-optimization of OCCT (§ 141.81(a)(1)(i), (a)(2)(i), and (a)(3)(i) in the 2021 LCRR). Accordingly, the action level serves a function for all system sizes in the CCT treatment technique. Some large systems never had to conduct a detailed demonstration because their lead levels were at or below the PQL of 0.005 mg/L, and therefore, they were deemed optimized. If those large systems exceed the PQL, they must conduct a detailed OCCT demonstration. Future re-optimization of these systems is prompted by an action level exceedance. Large systems with CCT installed that have lead levels at or below the PQL but later exceed the PQL may also be required by the State to re-optimize even if at or below the action level.

The EPA is finalizing revisions to several elements of the CCT treatment technique, including the lead action level, that support the feasibility of the CCT treatment technique as a whole, consistent with SDWA section 1412(b)(7)(A). For the LCRI, the EPA is maintaining the approach of using the action level, in addition to finalizing other revisions, in furtherance of the feasibility of the CCT treatment technique. This includes tap sampling requirements that are designed to better capture the lead levels of water in contact with sources of lead, including changes to the sampling protocol and site tiering (see section IV.E of this preamble). The EPA estimates that this change will result in more systems' exceeding the action level and evaluating CCT compared to the LCR (88 FR 84940, USEPA, 2023a; USEPA, 2024a, chapter 3, section 3.3.5). The EPA is also requiring most systems with lead and GRR service lines to conduct standard monitoring at the compliance date (see section IV.E.3.e of this preamble). This would require systems that are most likely to have higher levels of lead in drinking water, to monitor with the updated tap sampling protocol and assess 90th percentile lead levels against the action level after the first full six-month tap monitoring period after the LCRI compliance date, to ensure timely action is taken in response to elevated lead levels, if necessary. However, the EPA is maintaining the use of tap sampling in combination with the action level to determine when systems must install and re-optimize OCCT. The agency accounted for these revised tap sampling requirements in selecting the final action level (see section IV.F.4 of this preamble). In the final LCRI, the EPA has reduced the lead action level to 0.010 mg/L. Specifically, the EPA identified 0.010 mg/L as being generally representative of OCCT based on updated data and over 30 years of LCR implementation experience (see section IV.F.4 of this preamble for a discussion on the action level analysis). In selecting this action level, the EPA considered what is technically possible for small and medium systems in light of the identified challenges that still exist, including their fewer resources and more limited technical capacity compared to large systems and a limited number of CCT experts available nationally. Therefore, the EPA has determined that an action level of 0.010 mg/L would support the treatment technique for CCT overall, in addition to

other elements of this treatment technique, and is the most health protective level technically possible; it thus meets the feasibility standard at SDWA section 1412(b)(7)(A).

In addition to reducing the action level to 0.010 mg/L, the EPA established other requirements and flexibilities that would help address some of the technical challenges with CCT to ensure the treatment technique overall is feasible, some of which are discussed in this section. For example, the LCRI includes an option for water systems that are able to complete service line replacement at a mandatory minimum annual rate within five years or less to defer OCCT evaluation, which for large and medium systems with LSLs, involves conducting pipe rig/loop studies (§ 141.81(d)(1)(i) and (e)(1)(i)). The EPA anticipates that this option will address some of the technical concerns for systems that are able to remove a significant source of lead in their system within the five-year time period and which would otherwise be required to study and implement OCCT. For those systems, OCCT evaluation may no longer be necessary after service line replacement due to the removal of the most significant contributor of lead, or the CCT evaluation would be much less complex (*e.g.,* coupon or desktop study). During the five-year period after the compliance date for the LCRI, this provision will lead to less competition for outside corrosion control experts or system-State consultations on the appropriate corrosion control treatment as these systems complete their LSLR programs, which can ease implementation burden for systems otherwise required under the LCRI to optimize or re-optimize OCCT during this period after an action level or PQL exceedance. This is especially compelling for smaller systems that may be capable of completing service line replacement in less time, but doing so while simultaneously conducting OCCT evaluation and installation would exacerbate the existing technical challenges detailed above. Therefore, this new provision helps to ensure the technical feasibility of the CCT treatment technique, in addition to supporting the feasibility of other rule revisions, including mandatory service line replacement, and to maximize the public health protection of the LCRI as an NPDWR overall.

Additionally, the EPA is finalizing the proposed provision in § 141.81(a) that water systems that have re-optimized once after a lead action level exceedance and continually met all WQPs while they are completing their service line replacement program, are not required to re-optimize again in response to subsequent lead action level exceedances unless or until all lead and GRR service lines have been removed or required by the State (§ 141.81(a)(1) through (3)). As noted above, the EPA is aware that there are systems with OCCT that are not capable of reducing lead levels below the action level. The EPA anticipates that this will continue to be the case for some systems under the LCRI with updated tap sampling requirements and a lower action level. Also, water distribution systems will be undergoing changes in the form of mandatory service line replacement. The re-optimization requirements in the final LCRI are intended to prevent water systems from continually conducting re-optimization studies while simultaneously implementing their service line replacement program when further reduction in lead levels is unlikely due to various water system-specific factors (*e.g.,* water chemistry, composition of distribution system, lead in premise plumbing). This will also reduce burdens associated with the system-State interactions on re-optimized OCCT, and like the flexibility described in the paragraph above, is intended to address the technical challenges that impact the feasibility of the CCT treatment technique. Furthermore, as noted above, there may be challenges mitigating the secondary effects of CCT on drinking water quality (*e.g.,* increased risk of other contaminants) that may limit the effectiveness of OCCT for the purposes of reducing lead and copper levels. While the EPA is not requiring water systems to re-optimize more than once while they are conducting service line replacement as described above, the agency has added the requirement for systems that have removed all lead and GRR service lines that subsequently exceed the lead action level to re-optimize. The EPA expects that with the largest source of lead in drinking water removed, the optimal corrosion control may differ and systems can more appropriately address corrosion in the changed distribution system and better address health risks from lead remaining in premise plumbing. Additionally, water systems could potentially reduce CCT costs by changing their treatment, as appropriate, due to the removal of a significant lead source. Therefore, this requirement combined with the State discretion to require water systems to re-optimize will help to ensure the CCT treatment technique is both technically feasible and protects public health to the extent feasible. The EPA is retaining the definition of OCCT that requires water systems to minimize lead and copper concentrations at user's tap while ensuring that the treatment does not cause the water system to violate any NPDWRs (§ 141.2). The EPA also introduced in the 2021 LCRR flexibilities for small water systems to implement an alternative option to CCT if approved by the State (see section IV.I of this preamble).

Given the analysis above and in accordance with the statutory standard, the EPA finds that the CCT treatment technique for LCRI meets the feasibility standard in accordance with SDWA section 1412(b)(7)(A). CCT continues to be a best available technology effective at preventing adverse health effects from lead and copper in drinking water to the greatest extent that is both affordable and technically possible given the final requirements in LCRI.

In addition to finding the CCT treatment technique for LCRI is feasible, the EPA also evaluated the water system burden of CCT in the context of other important actions water systems will be taking to reduce lead levels in drinking water. Notably, all water systems are required to conduct LSLR regardless of lead levels (see section IV.B of this preamble), which the EPA estimates will increase both water system and State burden. Therefore, the EPA finds that the CCT requirements also help to support the feasibility of the separate but complementary treatment technique for mandatory service line replacement to address the multiple and unique sources of lead contamination as part of this NPDWR.

b. 2021 LCRR CCT Requirements

This section includes a brief summary of CCT requirements in the 2021 LCRR that are important context for the EPA's proposed and final changes in LCRI and the EPA's responses to comments, addressed in section IV.F.2 of this preamble.

Under the 2021 LCRR, medium and large systems are required to install or re-optimize OCCT in response to a lead or copper action level exceedance. Medium and large system with LSLs that exceed the lead action level are required to harvest lead pipes from the distribution system and conduct flow-through pipe rigs to evaluate options for OCCT or re-optimized OCCT. Large systems with CCT that exceed the lead PQL of 0.005 mg/L may be required to re-optimize their OCCT. Large systems without CCT that exceed the lead PQL are required to complete steps to install CCT.

Under the 2021 LCRR, in the case of a trigger level exceedance for systems

without CCT, small and medium systems must recommend their approach to CCT to their primacy agency (except for small systems that select other compliance alternatives). Unless there is a subsequent action level exceedance, small and medium water systems without CCT are not required to conduct a subsequent corrosion control study. In the 2021 LCRR, the EPA also clarified that the continued operation and maintenance of OCCT and re-optimized OCCT requirements apply to consecutive systems in § 141.82(g), including those distributing water that has been treated for corrosion control by another system. For context, a consecutive system is defined at § 141.2 as ''a public water system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.''

c. LCRI Proposed CCT Revisions

For the LCRI, the EPA proposed several changes for CCT including removing the trigger level, lowering the lead action level, adopting regulatory flexibilities for some systems simultaneously complying with mandatory service line replacement requirements, and changing the water quality parameter monitoring requirements for medium systems. The EPA also proposed new or revised regulatory text to streamline implementation of the rule. This section includes a brief summary of these proposed changes and the agency's primary rationale for each one. System sizes discussed below in CCT requirements include, as defined in § 141.2, small systems (serves 10,000 persons or fewer); medium systems (serves greater than 10,000 persons and less than or equal to 50,000 persons); and large systems (serves more than 50,000 persons).

Under the LCRI, the EPA proposed to eliminate the lead trigger level and to require systems to install or re-optimize OCCT after an exceedance of the proposed lead action level of 0.010 mg/L. As stated at proposal, streamlining the rule to only use an action level reduces the complexity of the rule. As a result of eliminating the trigger level, reducing the lead action level, and including a more rigorous tap sampling protocol, the EPA anticipates more systems could exceed the lead action level even when re-optimized than under the LCRR, especially in the first few years after the compliance date for LCRI where systems would also implementing the mandatory service line replacement requirements under the proposed LCRI. Thus, the EPA proposed in § 141.81(a) that systems that have re-optimized once after the LCRI compliance date and continuously meet optimal water quality parameters (OWQPs) would not be required to re-optimize again if there are subsequent action level exceedances, unless required by the State. While the lead action level is intended to be generally representative of effective OCCT, the EPA recognizes that there may be some instances where systems would be unable to meet the proposed lowered lead action level of 0.010 mg/L because tap water lead levels can be influenced by other factors. As discussed in the proposed LCRI, lead level variability at a single site can occur due to water use patterns and physical disturbances of pipes causing particulate release (see sections V.A and V.E.1 of proposed LCRI preamble (88 FR 84878, USEPA, 2023a)). Elevated lead levels due to these factors would not be reflective of the performance of the corrosion control treatment. For systems that have already evaluated the CCT options under the re-optimization process, resources would be better devoted to other lead mitigation activities, such as replacing lead and galvanized service lines, rather than repeating the same steps. However, States may require such systems to conduct a corrosion control study. In addition, the EPA is retaining the 2021 LCRR requirements that States may require a system to conduct a corrosion control study to re-evaluate corrosion control treatment for purposes such as to obtain State approval for a long-term treatment change or addition of a new source in the LCRI. The proposed LCRI had duplicate language for the notification requirement in §§ 141.81(h) and 141.90(a)(4). The final LCRI consolidates most of the requirements in § 141.81(h) with a cross-reference in § 141.90(a)(4). The EPA also revised the second sentence in § 141.81(h) to clarify language regarding the State's discretion to require actions to ensure that the system will operate and maintain OCCT.

As proposed, States would retain the discretion to modify previous designations of OCCT and re-optimized OCCT based on their own determination or in response to a request by a water system if the State concludes that a change is necessary to ensure the system continues to optimize corrosion control treatment (§ 141.82(h)). The EPA also proposed that States can require the system to conduct additional CCT studies. The EPA anticipates that removing sources of lead in drinking water, such as through mandatory LSLR, would reduce the number of systems that exceed the lead action level over time. In the meantime, water systems would be required to continue to operate and maintain their re-optimized OCCT as demonstrated through monitoring for OWQPs, and comply with other proposed mitigation measures (*e.g.,* conduct public outreach and make filters available for systems with multiple lead action level exceedances) to reduce exposure to lead in drinking water.

At § 141.81(f), the EPA also proposed to allow a system with a lead action level exceedance to defer installing or re-optimizing OCCT if the system can replace 100 percent of its LSLs and GRR service lines within five years of the date the system first exceeds the lead action level. The purpose of this proposed requirement would be to allow systems to avoid the costly and time-consuming process of conducting a harvested LSL pipe rig/loop CCT study and installing the corresponding OCCT when the identified treatment would not be tailored for the system's long-term distribution system conditions without LSLs. As the EPA estimated at proposal, it generally takes approximately five years to complete the CCT evaluation and installation process: 30 months to construct a pipe rig/loop and conduct a treatment study followed by 30 months to install the State-approved OCCT and an additional one year to conduct follow-up monitoring (see section V.E.1 in the proposed LCRI (88 FR 84937, USEPA, 2023a)). If a system is on track to replace all its lead and GRR service lines within five years, the optimal treatment identified by a costly and time-consuming pipe rig/loop study may no longer be the optimal treatment after all LSLs and GRR service lines are replaced. This is because the pipe rig/loop studies are based on lead pipes in the water system and if all of those are replaced, the results of the pipe rig/loop study would likely be no longer relevant. Following 100 percent lead and GRR service line replacement, a different and less resource-intensive study, such as a coupon or desk study, evaluating OCCT on current conditions in the system would be more appropriate.

Under this proposed option, eligible systems would only be allowed to defer optimizing or re-optimizing OCCT if water systems meet both of the following two requirements: (1) Annually replace at least 20 percent of their remaining service lines that require replacement (in accordance with the proposed § 141.84(d)(5)(v)); and (2) have no lead, GRR, or unknown service

lines remaining at the end of the five-year period. Systems would need to ensure they have access to replace all lead and GRR service lines in their inventories and have identified all unknown service lines in their inventory. During this five-year period, eligible systems would still be required to meet all other rule requirements including public notification, public education, and if applicable, public education following multiple action level exceedances, including making filters available. Systems with CCT that elect this option would be required to continue operating their existing CCT throughout those five years.

The EPA anticipates that greater overall public health benefits could result from replacing all lead and GRR service lines within five years compared to implementing the requirement to install or re-optimize OCCT with a lower action level because the most significant sources of lead in drinking water, when present, would be removed from the system (Sandvig et al., 2008). Additionally, this proposed requirement would allow water systems to dedicate more staffing and financial resources to solely replacing lead and GRR service lines within five years rather than being required to divide these resources between completing mandatory service line replacement and conducting a pipe loop study with results that may no longer be applicable following 100 percent replacement of lead and GRR service lines.

As further provided in the proposed requirements, large and medium systems unable to replace a minimum of 20 percent of the lead or GRR service lines in a system's distribution system annually or unable to replace 100 percent of their lead and GRR service lines within five years must proceed with the harvested pipe rig/loop study and install or re-optimize OCCT. The pipe loop requirements would apply to any small system required by the State to conduct a pipe rig/loop study.

Small systems unable to replace a minimum of 20 percent of the lead or GRR service lines in a system's distribution system annually or replace 100 percent of the lead and GRR service lines in a system's distribution system within five years would be required to recommend OCCT or re-optimized OCCT; and all NTNCWSs and the subset of CWSs serving 3,300 persons or fewer would be required to propose a small system compliance option and implement the State-approved approach (see section IV.I of this preamble for further discussion on compliance alternatives for CWSs serving 3,300 persons or fewer and NTNCWSs). Water systems that replace 100 percent of the lead and GRR service lines in this five-year period but subsequently exceed the action level (or the PQL for large systems without CCT) after the compliance date for the LCRI would be required to proceed with meeting the proposed CCT requirements for systems with only non-lead service lines.

In addition, the EPA proposed changes to expedite when States can approve CCT re-optimization treatment changes for systems. Under the 2021 LCRR, States can approve existing CCT re-optimization modifications without requiring a new CCT study for systems that have 90th percentile lead levels between the trigger level of 0.010 mg/L and the lead action level of 0.015 mg/L. For the LCRI, the EPA proposed to eliminate the trigger level and to lower the lead action level to 0.010 mg/L. Concurrently, the EPA also proposed that States may approve, without a new CCT study, a CCT re-optimization treatment change for a system that exceeds the proposed action level for lead, but which previously conducted a CCT study. In developing the CCT change, the State would be required to evaluate a water system's past CCT study results. The EPA proposed this update because it would expedite treatment changes, allowing the benefits of treatment modifications to be realized sooner and avoiding a redundant CCT study that may not produce different results from previous studies. The treatment recommendation and CCT study process can take multiple years to complete. The CCT study and State designation of re-optimized OCCT based on the results of that study under § 141.81(d)(3) and (4), respectively takes two additional years. For water systems with existing CCT, the water system may be able to alter the existing treatment (*e.g.,* increase pH and/or orthophosphate dose) without a new CCT study on a much faster timeframe rather than waiting for study results that may indicate that same change.

The EPA proposed modifications to the CCT studies that may be required in the event of a lead action level exceedance for small systems with LSLs. Under the 2021 LCRR, small systems that chose CCT and exceed the action level are required to propose a treatment option to the State. The State may require small systems to conduct corrosion studies using a pipe rig/loop (§ 141.82(c)(3)). For the 2021 LCRR, the EPA also recommended that small systems serving 10,000 persons or fewer with LSLs that exceed the lead action level choose the LSLR small system flexibility option rather than CCT because the cost of the pipe rig/loop studies would be approximately equal to the cost of replacing 55 LSLs (USEPA, 2020e). However, as discussed in section V.G of the proposed LCRI (88 FR 84944, USEPA, 2023a), the EPA proposed to remove the LSLR option from the small system flexibility options because LSLR would be mandatory under the proposed LCRI. Therefore, the EPA proposed under the LCRI to exclude small systems with LSLs serving 10,000 persons or fewer from having to conduct a pipe rig/loop study because these systems often lack the technical expertise required to design and construct and operate the pipe rig/loop. Instead, these small systems could better focus limited resources on replacing lead and GRR service lines, that would otherwise be dedicated to a pipe rig/loop if they exceed the lead action level and are required to identify OCCT or a small system compliance flexibility option. Under the proposed LCRI, the State may require a pipe rig/loop study for a small system if the State determines that the small system has the technical capabilities to conduct such a study (see § 141.82(c)(3) for large and medium systems with LSLs and other systems as required by the State to conduct pipe rig/loop studies).

In addition, the EPA proposed to require that States designate OWQPs for medium systems that must install or re-optimize OCCT after exceeding the lead action level (§ 141.81(a)(2)(i)). The EPA also proposed that States designate OWQPs for medium systems with CCT that have not exceeded the action level (§ 141.81(a)(ii)). While the State could require medium systems with OCCT to meet OWQPs in the 2021 LCRR, the EPA proposed in the LCRI that States must establish OWQPs for medium systems with CCT and that these systems must meet their OWQPs. This proposed requirement would allow States to better assess whether these types of medium systems are maintaining their OCCT or re-optimized OCCT, as well as provide better day-to-day process control since source water quality can vary both daily and seasonally.

The EPA proposed to streamline some requirements in § 141.80, which resulted in the EPA proposing to move a 2021 LCRR provision from § 141.80(d)(4) to § 141.81(h). This requirement is for systems to notify the State before a long-term treatment change or the addition of a new source, and that States must review and approve the change or addition before it can be implemented by the system. This allows the State to require the water system to take additional actions to control corrosion. However, the EPA

notes the provision remains unchanged in substance from the 2021 LCRR.

2. Summary of Comments and the EPA's Response

a. Consecutive Systems

The EPA received comments about consecutive systems and the responsibilities for wholesale versus distribution systems related to CCT and DSSA requirements. Commenters asked the EPA to clarify which systems were supposed to monitor WQPs in the distribution system and which system is responsible if parameters are outside the designated range. Commenters also requested the EPA clarify which system would be required under the LCRI to conduct CCT studies and which system would be required to install it.

To respond to these comments, it is important to first provide additional context for consecutive systems requirements and the EPA guidance beginning with the 1991 LCR that goes beyond the specific rule areas and changes proposed for LCRI. In the preamble of the 1991 final LCR rule, the EPA strongly discouraged States and systems from using § 141.29 to modify monitoring requirements, noting that § 141.29 allows a State to modify the monitoring requirements imposed by specific regulations when a public water system supplies water to one or more other public water systems if the interconnection of the systems justifies treating them as a single system for monitoring purposes. EPA did not believe that modification by States of the monitoring requirements of the rule, as provided in § 141.29, would be appropriate because the primary source of high lead or copper levels at the tap is materials within the distribution system itself. Treating multiple water suppliers as one system would not distinguish between the different systems that may have different amounts of lead or copper materials in the distribution system and thus require different treatment strategies to reduce these levels. This contrasts with other contaminants where the contaminant level is uniform throughout the distribution system. EPA did not envision situations where multiple water systems should be considered as one system for purposes of § 141.29 and, therefore, strongly discourages States from allowing the modification to the monitoring requirements. (56 FR 26513, USEPA, 1991)

After the 1991 LCR was published, the EPA received proposals from several States and water systems to consolidate tap water and water quality parameter monitoring in consecutive water systems under § 141.29. In response to the proposals, the EPA issued a water supply guidance on January 10, 1992, entitled ''Consecutive Systems Regulated under the National Primary Drinking Water Regulation for Lead and Copper'' (USEPA, 1992). This guidance discusses the elements the EPA recommends should be included in the consecutive system agreements for the lead and copper rule, including those related to CCT. This guidance indicates that State proposals should identify the systems that would be responsible for completing the CCT requirements. In the guidance, the EPA states the agency expects that the wholesale or ''parent'' supply would be responsible for corrosion control throughout the entire service area. However, the EPA also notes that depending upon contractual agreements, the size and configuration of the satellite system(s), and the distance from the parent treatment facility, individual CCT may need to be installed at a point or points other than the parent plant.

While the EPA recognizes the implementation confusion raised by commenters with regard to CCT requirements for wholesale versus consecutive systems, as defined at § 141.2, the EPA disagrees with the commenters' requests to make changes to the LCRI to address these concerns. These questions are better addressed at the State level for the following reasons.

In the more than 30 years since the guidance was published, the EPA has promulgated or revised a number of regulations that can impact CCT. In particular, disinfection, disinfection by-products, and filtration treatment strategies can impact CCT. Given this additional complexity and the previously stated configuration factors in the guidance, the roles and responsibilities of the wholesale and consecutive systems regarding CCT should be worked out, on a system specific level, with the State. The EPA recommends any updates to a consecutive system agreement should discuss updated roles and responsibilities and also include how they relate to the DSSA under § 141.82(j), including water quality parameter monitoring in the distribution system, follow-up tap sampling at sites that exceed 0.010 mg/L, the treatment recommendation required under § 141.82(j)(3), and any distribution system actions or modifications of corrosion control treatment that result from the DSSA process. The EPA plans to update guidance on these topics after the LCRI is finalized.

b. Pipe Rig/Loop Studies

The EPA received comments related to pipe rig/loop studies. Some commenters claimed the EPA was being overly prescriptive by mandating when pipe rig/loop studies must occur noting they did not think harvested pipe rigs were necessary to assess OCCT. Other commenters suggested that pipe rig/loop studies should be optional or at a State's discretion or requested that the use of pipe rigs/loops be scaled back in the final rule because of the cost and complexity of pipe rig/loop studies (both in conducting the study and reviewing results from the study). Several commenters stated the mandatory pipe rig/loop requirements in the proposed LCRI should not apply to small systems because they believed pipe rig/loop studies are too costly and complex for small systems. Some commenters objected to the use of coupon studies because they asserted coupon studies do not evaluate the impact of corrosion control alternatives on the existing pipe scale in the distribution systems, which is evaluated in a harvested lead pipe rig/loop study.

Under the 2021 LCRR, small systems can choose a small system flexibility option, including LSLR and OCCT, but due to mandatory LSLR for all systems, the flexibility to choose LSLR was not included in the proposed LCRI. Therefore, the EPA proposed under the LCRI to exclude small systems with LSLs serving 10,000 persons or fewer from having to conduct a pipe rig/loop study because these systems often lack the technical expertise required to design and construct and operate the pipe rig/loop and they could better focus limited resources that would be dedicated to a pipe rig/loop on replacing their LSLs. However, the EPA stated in the proposed LCRI preamble that States could require small systems to conduct a pipe rig/loop study if the State determines that the small system has the technical capabilities to conduct such a study.

The EPA disagrees with commenters that suggested pipe rig/loop studies for all systems should be optional or at a State's discretion. The EPA is retaining the mandatory pipe rig/loop study requirements as proposed in the LCRI under § 141.81(d)(1) and (e)(1) for the subset of medium and large systems that will need to install or re-optimize OCCT (except those that meet the requirements under § 141.81(f) to replace all lead and GRR service lines in five years or less, or § 141.81(d)(1)(iv) for systems waived by the State that meet specific requirements). Systems, such as those with source water or treatment changes,

need to understand how changes in their corrosion control affect the existing pipe scale of LSLs. A pipe rig/loop study using harvested lead pipe from the distribution systems effectively demonstrates how that scale will interact with the CCT options and will provide vital information to determine the OCCT option. The EPA agrees with commenters that stated that coupon studies should have a limited role when evaluating impacts of corrosion control alternatives on existing pipe scales. The EPA proposed that coupon studies can be used to reduce the number of options that are evaluated in the harvested pipe rig/loop study, but cannot be used instead of the pipe rig/loop study because they do not evaluate the impact of the CCT options on the existing scale (§ 141.82(c)(3)).

In response to the commenter raising concerns about small systems' conducting mandatory pipe rig/loop studies, this was not a proposed requirement. The EPA excluded small systems from the proposed LCRI requirements for systems that must conduct a mandatory pipe rig/loop study because they often lack the technical knowledge and expertise to design and construct and operate the pipe rig. However, the EPA maintains that States could require small systems to conduct a pipe rig/loop study if the State determines that the small system has the technical capabilities to conduct such a study under 40 CFR 141.82(c)(3).

c. Re-Optimization for Systems Meeting Optimal Water Quality Parameters

Many commenters supported the proposed revisions from the 2021 LCRR in § 141.81(a)(1) through (3) to no longer require systems, unless required by the State, to re-optimize OCCT if they have already conducted CCT studies to re-optimize once following the compliance date for LCRI, continue to meet OWQPs designated by the State, and continue to operate and maintain their existing OCCT. The reasons cited by these commenters include that re-optimization takes extensive study and review and systems need to focus on other aspects of the rule and that it could become a paperwork exercise as systems are only able to control things at the entry point to the distribution system. Some commenters asked the EPA to provide States discretion to require systems to re-optimize OCCT even if they meet the criteria in § 141.81(a)(1)(i), (a)(2)(i), and (a)(3)(i) because the system might not be truly optimized or the treatment might not be effective at addressing lead or copper issues at that particular system. Some commenters did not support this change in the proposed LCRI and wanted the EPA to continue to require systems to re-optimize after action level exceedances, unless the State has determined after a full and carefully documented consideration that re-optimization is not needed. The reasons cited by the commenters include that EPA's rationale assumes that the water system and the State properly identified the single optimal CCT for the system in the one re-optimization process. The commenters also noted that the EPA's rationale describing that repeated action level exceedances may result from factors other than the performance of CCT is at odds with the EPA's rationale for setting the action level at 0.010 mg/L, which is supported by data as being generally representative of OCCT.

The EPA agrees in part with commenters who supported removing the requirement to re-optimize OCCT in certain instances. The EPA also agrees with commenters who support providing States with discretion to require systems to re-optimize even if they meet the criteria in § 141.81(a)(1) through (3). The EPA finalized the requirements in § 141.81(a)(1) through (3) and added language to each section clarifying that the State may require a system to re-optimize under § 141.82(h). The EPA agrees that under some circumstances, treatment could be re-evaluated and adjusted, and States are in the best position to determine whether a system must re-optimize. As discussed in the preamble to the proposed LCRI, States have the ability in LCRR to require re-optimization under § 141.82(h), which allows for the State to modify treatment decisions for OCCT and re-optimized OCCT. The EPA has added clarifying language in § 141.81(a)(1) through (3) that the State can require a system to re-optimize under the existing provision in § 141.82(h). The State can modify its decision for either OCCT or the OWQPs for OCCT. Under § 141.82(h), States can require a system to conduct a CCT study to support modification of the existing treatment. Water systems or other interested parties can also request a modification of the determination of OCCT with supporting documentation under this section of the rule. For the final LCRI, the EPA made edits to § 141.81(a)(1) through (3) to clarify that States have the discretion to require systems to re-optimize under § 141.82(h).

The EPA added a re-optimization requirement in the final LCRI for systems that exceed the lead action level after completing the removal of all lead and GRR service lines and have no lead status unknown service lines remaining in their inventory (§ 141.81(a)(1)(iii), (a)(2)(iii), and (a)(3)(iii)). The EPA added the requirement for systems that have removed all lead and GRRs service lines that subsequently exceed the lead action level to re-optimize because the EPA expects that after removing the most significant source of lead in drinking water, optimal corrosion control may change and systems may need to adjust their CCT once the most significant source of lead has been removed following study of corrosion control. While this long-term treatment change would also be covered by the requirements in § 141.81(h), there could be situations where the scaled-back CCT leads to an action level exceedance and the need for that OCCT to be re-optimized. Therefore, the EPA made this change for the final LCRI in partial response to commenters by trying to balance the need for the realities of re-optimizing CCT and the need for re-optimization during and after service line replacement given competing system requirements and the changes in the distribution system. This is similar to the requirement in § 141.81(f) for systems deferring OCCT while completing a LSLR program within five or less years.

The EPA disagrees in part with commenters who want the EPA to continue to require systems to re-optimize unless the State has determined after a full and carefully documented consideration that re-optimization is not needed. Under this provision, eligible systems will have already performed two optimizations, their initial optimization and the re-optimization under LCRI, which includes specific benchmarks that must be evaluated. The EPA anticipates repeating the same steps using the same tools more than once after the LCRI compliance date in systems with LSLs is unlikely to produce different results. Water systems with LSLs completing their replacement program may only qualify for this provision if they have already re-optimized once after the compliance date for LCRI, continue meeting their OWQPs designated by the State, and continue to operate and maintain their OCCT. Systems that experience a long-term change in treatment or source water must notify the State, and the State may require additional monitoring or take other actions, such as treatment studies, to ensure water systems maintain minimal levels of corrosion control in the distribution system. In addition, as discussed above, the EPA also included a requirement in the final LCRI for systems that have replaced all lead and

GRR service lines to re-optimize again if they exceed the lead action level, in addition to the ability for States to require systems re-optimize under § 141.81(h).

As noted in the proposed LCRI, the EPA recognizes that there may be some instances where systems may be unable to meet the proposed lowered lead action level of 0.010 mg/L because tap water lead levels can be influenced by other factors. As discussed in the proposed LCRI, lead level variability at individual sites can occur due to water use patterns and physical disturbances of pipes causing particulate release. Elevated lead levels due to these factors may not reflect the performance of CCT. The resources of systems that have already evaluated the CCT options under the re-optimization process would be better devoted to other mitigation activities (*e.g.,* conduct public outreach and make filters available for systems with multiple lead action level exceedances) rather than repeating the same steps.

d. Deferred OCCT

Many commenters supported the proposed OCCT deferral option if a system removed 100 percent of service lines within five years, but others expressed concern that the option required systems to replace portions of lead or GRRs service lines that are beyond their control, which would conflict with the requirements under SDWA.

To address the confusion about replacing lines beyond the control of the water system the agency is clarifying the final rule language at § 141.81(f) to confirm that systems must conduct full replacement of all lead and GRR service lines to be eligible and that no lead, GRR, or unknown service lines remain in the system's service line inventory at the end of the five-year-or-less period (§ 141.81(f)(1)(iii)). The OCCT deferral option is a compliance alternative for systems that have or can obtain access to all lead, GRR, and unknown lines; nothing in the rule requires systems to exercise this option.

Instead, the EPA strongly encourages systems that would like to exercise this deferral option to work to obtain control to replace each lead and GRR service line in order to take advantage of this provision. The EPA recommends systems identify ways to address some of the potential challenges typically associated with service line replacement, including obtaining access to a customer's property where consent is required and overcoming potential funding and financing barriers to complete customer-side replacements. Potential strategies could include community outreach to promote the service line replacement program to increase participation. While neither SDWA section 1412 nor the LCRI require water systems to pay for customer-side replacements (see section IV.B.4 of this preamble), the EPA also encourages systems to pursue financing to remove 100 percent of service lines within five years or less. For example, some systems utilizing this OCCT deferral option will no longer need to conduct the mandatory pipe rig/loop study, which the EPA estimates to cost between $308,000 and $377,000 depending upon the complexity of the study, if they complete 100 percent service line replacement within the five-year-or-less period (USEPA, 2024a, chapter 4, section 4.3.3). Those systems may be able to allocate the funds that would have been used for pipe rig/loop studies to replace customers' portions of lines instead, similar to what the City of Madison, Wisconsin did regarding potential avoided sewage costs for phosphorus removal if orthophosphate had to be added for corrosion control (Sandvig et al., 2008).

The EPA also received comments questioning whether the proposed regulatory language ''within five years'' only applied to systems completing their programs in five years or would also apply to systems completing those programs in less than five years. Other commenters expressed concerns about a system's ability to replace lines on a schedule less than five years. The EPA also received comments that were concerned whether a water system could use the full five-year period to avoid optimizing or re-optimizing OCCT during that period when it is feasible for them to complete 100 percent service line replacement in less than five years.

The EPA agrees with commenters that ''within five years'' is somewhat ambiguous and could create implementation confusion or be unnecessarily limiting to only apply to systems completing their programs in five years. For the final LCRI, the EPA is clarifying that the requirement encompasses systems completing 100 percent service line replacement in five years or less by modifying the regulatory text at § 141.81(f)(1)(i)(A) and (B) to read ''in five years or less'' instead of ''within five years.'' This approach is consistent with the EPA's rationale at proposal. Specifically, the five-year timeframe is based on the time it would take for a system to construct and conduct a pipe rig/loop study, make a treatment recommendation based on that study, and install and operate the State-approved OCCT (88 FR 84937, USEPA, 2023a). The results of a pipe loop study may no longer be applicable following 100 percent replacement of lead and GRR service lines. The EPA anticipates that there will be greater health benefits from replacing all lead and GRR services line in five years or less compared to if the system were required to complete the CCT steps and take longer than five years to complete LSLR, because a significant source of lead will be removed from the system (see section IV.F.1.a of this preamble). Like systems completing their LSLR program in five years, systems completing their programs in less than five years would be less far along in the optimization/re-optimization process. The costs to conduct a pipe rig/loop study would be best used to accelerate the LSLR program.

With respect to the concern that water systems may use the full five years even if it is feasible for the system to complete 100 percent service line replacement in less than five years, the State must set a faster replacement rate if feasible (§ 142.16(d)(6)) and the agency does not intend for the deferral option in § 141.81(f) to supersede a determination that it is feasible for a system to complete replacement in less than five years. Accordingly, the EPA revised the regulatory language for the final LCRI to specify how systems with a replacement timeframe of less than five years will be required to proceed under this option and how to calculate their annual replacement rate to ensure the systems meet their shorter replacement deadline. Systems must replace their lead or GRR service lines in less than five years if the State determines that a replacement deadline of less than five years is the fastest rate feasible or if they have less than five years left to complete their replacement program, based on their applicable mandatory replacement deadline.

This clarification necessitated additional changes to the regulatory text at § 141.81(f) to ensure this provision, as whole, was consistent throughout the rule and consistent with a parallel requirement for shortened service line replacement program deadlines, at § 141.84(d)(5)(v). In addition, these changes make the OCCT deferral option more workable for systems and States. For systems that can replace lead or GRR service lines in less than five years, the mandatory minimum annual replacement rate percentage to achieve 100 percent replacement at the end of their five-year-or-less period would not be 20 percent. Therefore, the EPA changed the 20 percent mandatory minimum annual replacement rate to an annual replacement rate in

§ 141.81(f)(1)(ii) based on the total number of years for replacement in § 141.81(f)(1)(i). This corresponds with and gives meaning to the modification clarifying that systems completing 100 percent service line replacement in less than five years will need a different minimum annual rate to add up to 100 percent. This will make it easier for systems to adopt a mandatory minimum annual replacement rate depending on their replacement program and LSL inventories. For example, systems removing 100 percent of their service lines in four years must do so at an annual minimum rate of 25 percent of those service lines each year, compared to a system completing service line replacement in three years at a minimum annual rate of 33 percent of service lines each year, barring the need to replace lines faster, as provided in the requirements at § 141.81 and discussed below.

As discussed in section IV.B.6 of this preamble, the EPA recognizes that some water systems will be able to replace service lines faster than the 10-year replacement deadline, such as systems that have few lead and GRR service lines. The EPA identified multiple water systems that have completed or are expected to completely replace all lead or GRR service lines within five years (USEPA, 2024d), which corresponds to a 20 percent or greater annual replacement rate. The EPA expects that these types of systems may elect to use this OCCT deferral option. The EPA also anticipates this option being used by systems that are replacing their lines at an annual rate less than 20 percent, but could exceed the lead action level later in their service line replacement program. Therefore, these systems may be able to feasibly replace at least 20 percent of their remaining lead and GRR service lines annually.

Further, to make this deferral option more consistent with the service line replacement provisions at § 141.81(f)(4) and provide States with the ability to monitor and ensure system compliance, the EPA revised the provision to require that systems provide written documentation to the State about the number of lead and GRR service lines replaced. In addition, to ensure that systems' service line replacement programs maximize public health protection and avoid the need for a system to allocate limited resources to conduct a pipe rig/loop study to install or re-optimize OCCT when a system's service line composition is changing, the final rule clarifies that systems must complete their service line replacement program as fast as is feasible at § 141.81(f)(1)(i). This text also helps to clarify that the requirement for systems on a shortened service line replacement deadline at § 141.81(f)(1)(i)(C) applies for systems availing themselves of this deferral option, but in a way that is consistent with the requirements of § 141.81(f)(1). Since the maximum length of the replacement program under § 141.81(f) is five years and all lead and GRRs service lines must be replaced, different annual replacement rates must be applied to these systems than those under § 141.84(d)(5). The EPA also added dates and reference points mirroring other parts of the proposed and final LCRI service line replacement and inventory requirements to make this provision clearer and more implementable.

e. Long-Term Source or Treatment Change

The EPA also received comments stating the language in § 141.81(h) on notification requirements for upcoming long-term change in treatment or source is confusing. In the proposed LCRI, language from § 141.90(a)(3) under the 2021 LCRR was moved to § 141.81(h) as it relates to the notification and approval requirements before a long-term treatment change or addition of a new source. The proposed LCRI changed some of the 2021 LCRR language and made an inadvertent error stating that actions could be required to ensure that the system maintains minimal levels of corrosion control rather than to ensure the system will operate and maintain optimal corrosion control treatment. To reduce confusion, in the final LCRI, the EPA has reverted back to the 2021 LCRR language related to OCCT in § 141.81(h) and has included the examples of long-term treatment changes in §§ 141.90(a)(4) and 141.81(h) to ensure these examples are considered long-term treatment changes.

3. Final Rule Requirements

The EPA is finalizing most CCT requirements as proposed, except for clarifying some regulatory text in light of public comments received. In addition, the EPA is making some changes to the OCCT deferral option for systems that can complete 100 percent replacement of full lead and GRR service lines in five years or less at a minimum annual rate in response to comments raising questions about eligibility requirements and how this option would be implemented by systems and States, among others. The EPA is also including a requirement for systems without lead and GRR service lines to re-optimize again if they exceed the lead action level after completing their service line replacement program.

The final LCRI requires water systems that exceed the action level to optimize or re-optimize their OCCT. Consistent with the proposal for LCRI, the EPA is eliminating the 2021 LCRR trigger level and finalizing revisions to expedite when States can approve an existing CCT modification for re-optimization under § 141.81(d)(1)(iv). Systems, depending on their size, must either conduct treatment studies or consult with the State to determine the most appropriate treatment steps. The EPA is maintaining the 2021 LCRR requirement in § 141.82(g) for continued operation and maintenance for OCCT and re-optimized OCCT for all systems, including consecutive systems.

The EPA is also finalizing the requirement that large and medium systems with LSLs that must optimize or re-optimize OCCT, and cannot meet the existing treatment modification or the five-year or less replacement of all lead and GRR service lines requirements in § 141.81(d)(1)(iv) or (f), will need to conduct a mandatory harvested pipe rig/loop study (§ 141.81(d)(1)(i) and (e)(1)(i)). Under the final LCRI § 141.82(c)(3), small systems would not be required to conduct a harvested pipe rig/loop study, unless required to do so by the State.

In addition, the EPA is finalizing the requirements at § 141.81(a)(1)(i)(A), (a)(2)(i)(A), and (a)(3)(i)(A) that systems with lead and GRR service lines must only re-optimize once after the compliance date of the rule if they meet the following criteria listed in of § 141.81(a)(1)(i) and (ii), (a)(2)(i) and (ii), and (a)(3)(i) and (ii) of the rule: the system has already once re-optimized OCCT, currently meets OWQPs designated by the State, continues to operate OCCT, and the State is not requiring re-optimization under § 141.82(h). The EPA also included a requirement under § 141.81(a)(1) through (3) for systems that have completed their service line replacement program and have no lead, galvanized requiring replacement, or lead status unknown service lines remaining in their inventory to re-optimize again if they exceed the lead action level. In addition, the EPA also added § 141.81(a)(1)(ii), (a)(2)(ii), and (a)(3)(ii) to ensure it is clear that States have the discretion to require systems to re-optimize based on § 141.82(h).

The EPA is finalizing the OCCT deferral option for systems that can remove all lead and GRR service lines in five years or less at § 141.81(f). For the final LCRI, the EPA is clarifying some regulatory text from the proposal, and adding some associated requirements for the OCCT deferral

option for systems that can complete lead and GRR service line replacement in five years or less. These changes address concerns raised by commenters that systems could use the full five years to avoid optimizing or re-optimizing OCCT when it is feasible for them to complete 100 percent service line replacement in fewer than five years (see § 141.81(f)(1)). For a more in-depth discussion of the final LCRI requirements for the OCCT deferral option, please see section IV.F.2.d of this preamble.

The EPA is finalizing the revisions to the existing treatment modification that States can allow without an additional CCT study under § 141.81(d)(1)(iv) for re-optimization for some systems. The EPA is finalizing the revisions under § 141.81(a)(2) that medium systems with CCT (except those that meet § 141.81(b)(3)) need to demonstrate OCCT by meeting OWQPs (as discussed in section IV.G of this preamble). The EPA is also finalizing other non-substantive textual and structural changes, as proposed, that streamline and clarify the rule language in order to improve implementation of the requirements. For example, the EPA has reverted back to the 2021 LCRR language related to OCCT in § 141.81(h) and has included the examples of long-term treatment changes in §§ 141.90(a)(4) and 141.81(h) to ensure these examples are considered long-term treatment changes.

4. Lead Action Level and Trigger Level

a. Rationale and Proposed LCRI Revisions

In the 1991 LCR, the EPA set the action levels for lead and copper at 0.015 mg/L and 1.3 mg/L, respectively. As discussed in section IV.F.1 of this preamble, the EPA introduced lead and copper action levels in the LCR as a tool to limit the number of PWSs that would need to complete a detailed CCT demonstration and/or install OCCT. The EPA stated that its selection of values for the action levels ''reflects EPA's assessment of a level that is generally representative of effective corrosion control treatment and [it] is therefore, useful as a tool for simplifying the implementation of the treatment technique'' (56 FR 26490, USEPA, 1991). In 1991, the EPA evaluated treatment data from 39 medium size systems without LSLs and 11 with LSLs and selected a 90th percentile lead level of 0.015 mg/L that was ''generally representative'' of OCCT, while acknowledging that some systems may not be able to achieve that level. Not only is there no precise level of lead and copper at the tap that reflects application of effective CCT in water systems nationally, but the EPA further noted that CCT demonstration studies ''cannot be expected to predict the precise lead and copper levels at the tap'' and that ''relying solely on laboratory studies to predict the effectiveness of corrosion control treatment would not indicate the levels of lead or copper at taps'' (56 FR 26486, USEPA, 1991). Accordingly, the EPA relied on tap sampling data to characterize CCT performance for reducing lead and copper levels at the tap.

Under the LCR, systems serving 50,000 persons or fewer systems demonstrated they were optimized by meeting the action level of 0.015 mg/L as the level generally representative of effective corrosion control treatment. Systems serving over 50,000 persons were required to conduct a detailed demonstration of OCCT regardless of 90th percentile levels unless they measured 90th percentile lead levels below the PQL of 0.005 mg/L and were deemed optimized. As noted in section III.C of this preamble, the EPA introduced the lead trigger level of 0.010 mg/L in the 2021 LCRR to prompt water systems to take proactive actions prior to an action level exceedance, including studying and/or re-optimizing OCCT. Additionally, systems of any size with CCT are required under the 2021 LCRR to re-optimize if they exceed the action level.

For the LCRI, the EPA proposed to eliminate the lead trigger level and lower the lead action level to 0.010 mg/L. These changes were proposed to address priorities identified in the LCRR review, including reducing the complexity of the rule and re-evaluating options to consolidate the action level and trigger level, as well as feedback the EPA heard during the development of the proposed LCRI (86 FR 71578–71579, USEPA, 2021b). As described in the proposed LCRI preamble, the EPA evaluated the trigger level with respect to complexity, implementation, and the public communication challenge associated with two lead levels. Additionally, the EPA considered lowering the lead action levels in the context of other proposed changes in the LCRI, including service line replacement irrespective of lead levels and a revised tap sampling protocol designed to better characterize lead levels in drinking water (88 FR 84939, USEPA, 2023a).

In the proposed LCRI preamble, the EPA evaluated potential lead action levels of 0.015 mg/L, 0.010 mg/L, and 0.005 mg/L (88 FR 84939–84942, USEPA, 2023a). The EPA considered several factors when selecting the proposed lead action level of 0.010 mg/L. Specifically, the EPA selected an action level of 0.010 mg/L as the preferred alternative at proposal because it is supported by past CCT performance data as being generally representative of OCCT when adjusted for the LCRI tap sampling protocol. The EPA found that the ability of systems to limit the corrosivity of water in the distribution system has greatly improved over the past 30 years of LCR implementation and that more recent data supports a lower level as being a more appropriate screen for determining which small systems and medium systems without CCT are required to conduct a detailed OCCT demonstration, and for which all systems with CCT, including large systems, are required to re-optimize. The EPA also considered factors affecting technical feasibility that the action level concept is intended to address for the purposes of making the CCT treatment technique feasible (see section IV.F.1 of this preamble). These factors include the administrative burden on water systems required to install or re-optimize OCCT after a lead action level exceedance, the availability of technical experts to support CCT implementation, and the technological limitations of reliably measuring lead levels (*i.e.,* the PQL) (88 FR 84941–84942, USEPA, 2023a). These technical feasibility considerations are in addition to the agency's evaluating requirements for the CCT treatment technique in the context of other actions that would be required by systems in the LCRI, including service line replacement.

b. Summary of Comments and the EPA's Response

i. Lead Action Level

The EPA received a range of comments on the value for the lead action level. Many commenters supported reducing the lead action level to 0.010 mg/L stating that it is a reasonable level for evaluating CCT and would prompt more water systems to take actions to reduce lead levels. Other commenters disagreed and stated that the EPA should maintain the current lead action level at 0.015 mg/L. Some of these commenters indicated that the EPA did not demonstrate in the proposal that water systems can reliably achieve 0.010 mg/L and that the requirements are not feasible, specifically when combined with the proposed changes to the tap sampling protocol, sample site tiering, and 90th percentile calculation instructions. Other commenters supported a

reduction in the lead action level but stated that the EPA must reduce the level to 0.005 mg/L or lower, citing public health benefits that would result from actions taken at lower levels and stating that there is no safe level of lead in drinking water. The EPA also received comments that disagreed with the agency's analyses used to support proposing a lower action level of 0.010 mg/L and not 0.005 mg/L, including that the EPA used past CCT performance data that does not reflect how effective CCT can be, stating that systems have not been trying to reduce lead and copper levels in drinking water to ''as low as possible'' under the LCR, and that the CCT requirements in the LCR do not reflect advances in corrosion control science. Additionally, a few commenters stated that the EPA must use a different percentile other than the 90th percentile to compare against the action level. Specifically, some stated that the EPA must use a higher percentile (*e.g.,* 95th, 98th, 99th) or a maximum level because doing so would result in more systems having action level exceedances and therefore be required to take actions. They added that the 90th percentile allows lead levels to be higher than the action level at more individual sites than a higher percentile would and noted that the water system is not required to take action at those sites. Another commenter stated that the EPA should use a measure of central tendency (*e.g.,* median) because the 90th percentile is too conservative in the context of other risk reduction measures in the LCRI including public education and LSLR.

The EPA disagrees with commenters who stated that the EPA must set the lead action level at a level that is ''reliably achievable'' by water systems. These commenters misconstrue the function and purpose of the lead action level. The action level is used to evaluate CCT, and it is set at a level that the EPA determined is generally representative of optimized CCT such that the overall treatment technique for CCT is feasible in accordance with SDWA section 1412(b)(7)(A). The action level is not independently evaluated for feasibility. The action level is one element of the treatment technique. The EPA evaluates the entirety of the treatment technique (*i.e.,* CCT) for feasibility. Based on the plain reading of the statutory requirements for determining the feasibility of a treatment technique, the action level supports the agency's feasibility determination for CCT (see section IV.F.1 of this preamble) but it is not required to meet the feasibility standard at SDWA section 1412(b)(7)(A) on its own. For further discussion see the regulatory history section on feasibility in section III.D.3 of this preamble.

Additionally, water systems are not required to achieve the action level under the LCRI; the action level is not an MCL and serves a different purpose than an MCL. Notably, the action level is not a health-based level and it does not determine the compliance status of a system like an MCL does. If a system fails to meet the action level either initially or after the installation of treatment, the system is not in violation of the rule providing the water system complies with the CCT requirements (*e.g.,* CCT has been optimized or re-optimized). It is for the same reason that the EPA disagrees with commenters who stated that the EPA must set the action level to a level as close to the MCLG of 0 mg/L as feasible. As discussed in detail in section IV.A of this preamble, the EPA established a treatment technique rule for lead and copper because it is not ''economically or technologically feasible to ascertain the level of the contaminant'' (42 U.S.C. 300g–1(b)(7)(A)). The action level is not an MCL and is not required to adhere to the statutory standard applied to MCLs.

The EPA notes that there were comments both for and against the EPA's proposed action level of 0.010 mg/L. For the final LCRI, the EPA is setting the lead action level at 0.010 mg/L. The EPA considered several factors when selecting its proposed lower lead action level of 0.010 mg/L. The EPA's primary consideration was the finding that an action level of 0.010 mg/L is supported by past CCT performance data as being generally representative of OCCT. More recent and higher quality lead data are available from over 30 years of implementing LCR, which allowed the EPA to reassess which level is generally representative of OCCT using data from systems with CCT. The EPA disagrees with commenters who argued that past CCT performance data do not reflect effective CCT in part because systems were not required under the LCR to reduce lead levels to ''as low as possible.'' The EPA reasoned that 90th percentile lead levels from systems with CCT, collected through LCR reporting, is the best available data for determining a revised action level. As discussed in section IV.F.1 of this preamble, while CCT is effective at reducing lead and copper levels in drinking water, there are other secondary effects of treatment which may prevent a water system from reducing lead levels to ''as low as possible'' with CCT, including that the treatment could lead to increased levels of other compounds which are also public health risks. The EPA defines OCCT as the ''best'' treatment technique for the purposes of this rule (see SDWA section 1412(b)(4)(D)) as ''corrosion control treatment that minimizes the lead and copper concentrations at users' taps while ensuring that the treatment does not cause the water system to violate any National Primary Drinking Water Regulations'' (§ 141.2). When the State evaluates the CCT studies and sets OWQPs, they are required to do so in a manner to reduce lead and copper concentrations as low as technically possible while ensuring compliance with other NPDWRs. Historical data from systems with CCT collected through LCR reporting reflect real world conditions that account for protecting public health from other contaminants in addition to lead and copper. Specifically, systems that have installed OCCT under the LCR are controlling corrosion to reduce lead and copper concentrations accounting for the unique characteristics of their water system, such as water chemistries and other potential contaminants.

Furthermore, these commenters did not offer alternative data for the EPA to consider, nor detail how the EPA should account for how lead and copper concentrations at the tap would differ based on if the LCR had included a different set of requirements (*e.g.,* a different definition of OCCT in § 141.2). Additionally, it is not possible for the agency to predict how lead and copper levels would be different based on theoretical studies. As noted in the 1991 LCR, ''relying solely on laboratory studies to predict the effectiveness of corrosion control treatment would not indicate the level of lead or copper at taps'' (56 FR 26486, USEPA 1991). More recent literature shows that theoretical predictions may not align with real-word conditions. For example, Tully et al. (2019) evaluated model predictions of LSL systems and found that 13 out of 22 systems evaluated did not follow model predictions of scale formation and lead release, demonstrating the importance of pilot studies to evaluate and optimize CCT and corresponding tap sampling for demonstrating performance. Therefore, the EPA used 90th percentile lead levels from systems with CCT, collected through LCR reporting, for determining a revised action level and to inform a determination of OCCT feasibility because it is the best available data.

To inform the selection of the lead action level, the EPA identified a 90th percentile lead level that is generally representative of OCCT. As discussed in section IV.F.1 of this preamble the

action level is not based on a precise statistical evaluation of treatment at all systems. Rather, the EPA considered 90th percentile lead levels reported to the EPA's Safe Drinking Water Information System (SDWIS) over the years 2012–2020 for community water systems (of all sizes) with known LSL and CCT status (*i.e.,* information on whether a system has LSL sites and whether the system has installed CCT). For the final LCRI, the EPA updated the number of evaluated systems from 6,529 in the proposal to 6,551 systems (see USEPA, 2024a, chapter 3, sections 3.3.3–3.3.5 for how the agency determined LSL and CCT status and lead 90th percentile values for these systems). While the agency considered data from all systems with known CCT and LSL status, the data from systems with CCT installed is particularly relevant in identifying a level generally representative of OCCT. The available lead 90th percentile data were collected using the tap sampling protocol and tiering criteria in the LCR. Contrary to the suggestion of some commenters, in selecting a lower action level, the EPA took into account that changes to the tap sampling protocol and site selection criteria in the LCRI will likely affect some water systems' 90th percentile lead levels. To account for the differences in the tap sampling requirements under the LCR and the LCRI, the EPA developed adjustment ratios. The EPA developed an adjustment ratio using first- and fifth-liter tap sample data from the State of Michigan to account for the LCRI requirement for LSL systems to collect both first- and fifth-liter samples and use the higher value to calculate the 90th percentile. An analysis of LCR compliance data in Slabaugh et al. (2015) that compared lead 90th percentile values from samples collected from all LSL sites to lead 90th percentiles from samples collected from both lead and non-LSL sites was used to develop an adjustment ratio to account for the requirement introduced in the 2021 LCRR and retained in the final LCRI that LSL systems collect all samples from LSL sites where possible. The reported 90th percentile values were multiplied with the adjustment ratios to estimate what the values would be if they were collected in accordance with the LCRI. This adjustment accounts for changes in the sampling protocol and tiering and this methodology has the benefit of being applicable to a large set of data to evaluate a level of generally representative OCCT. The action level analysis conducted in the LCRI is more robust than what was available to the agency when it first selected a lead action level of 0.015 mg/L (56 FR 26484, USEPA, 1991). See the final LCRI Economic Analysis (USEPA, 2024a, chapter 3, section 3.3.5) for additional details about the multiplier approach and the associated uncertainties.

The EPA categorized the 6,551 systems based on combinations of LSL and CCT status using their highest 90th percentile lead level (as adjusted for the LCRI sampling protocol) reported over the 2012 to 2020 analysis period to estimate the percentage of systems at or below the potential lower action levels (''Analysis of reported 90th percentile values from 2012–2020 for final LCRI.xlsx'' in the LCRI docket). The EPA specifically evaluated 0.015 mg/L, 0.010 mg/L, and 0.005 mg/L because they correspond to the LCR lead action level, the 2021 LCRR lead trigger level, and the lead PQL, respectively. Their estimates are presented in Exhibit 2 by LSL and CCT status.

EXHIBIT 2—PERCENT OF SYSTEMS BY LSL AND CCT STATUS WITH LEAD LEVELS AT OR BELOW POTENTIAL LEAD ACTION LEVELS ADJUSTED FOR THE FINAL LCRI SAMPLING PROTOCOL

[2012–2020]

LSL and CCT status (number of systems) [1]	P90 [2] ≤ 0.015 mg/L (%)	P90 [2] ≤ 0.010 mg/L (%)	P90 [2] ≤ 0.005 mg/L (%)
No LSLs/CCT (2,062)	95	92	82
LSLs/CCT (1,277)	73	60	38
No LSLs/No CCT (2,731)	95	91	78
LSLs/No CCT (481)	80	64	37

[1] Data from 6,551 community water systems with known CCT and LSL status. See ''Analysis of reported 90th percentile values from 2012–2020 for final LCRI.xlsx'' in EPA–HQ–OW–2022–0801.

[2] Systems categorized based on their highest lead 90th percentile (P90) value reported (SDWIS 2012–2020).

When accounting for the final LCRI sampling requirements, the EPA estimates between 60 and 92 percent of the 6,551 systems evaluated are at or below the revised action level of 0.010 mg/L (Exhibit 2). The EPA notes that while up to 82 percent of non-LSL systems with CCT are estimated to be at or below 0.005 mg/L, only 38 percent of the evaluated systems with LSLs are expected to be at or below that level. This is far below half of the 1,227 LSL systems with CCT that the EPA evaluated. Therefore, 0.005 mg/L is not generally representative of OCCT, particularly for LSL systems. The EPA also discussed in the LCRI proposal how the action level cannot be set below the lead PQL of 0.005 mg/L, which represents the limitations of reliably measuring lead levels (88 FR 84942, USEPA, 2023a). The EPA received comments which agreed that the action level should not be set lower than the lead PQL. The EPA also received comments requesting the agency re-evaluate if 0.005 mg/L should remain the PQL for lead. See section IV.E.2.i of this preamble for further discussion of the PQL and the public comments received.

The EPA acknowledges that a higher percentage of systems are estimated to meet the previous action level of 0.015 mg/L (*i.e.,* 73 to 95 percent); however, a large and generally representative number of systems can also meet 0.010 mg/L and therefore, it is also technically possible for systems to meet an action level of 0.010 mg/L as part of the treatment technique for CCT. Additionally, while the action level is not an MCL, an action level of 0.010 mg/L would trigger more systems into detailed optimization demonstrations or re-optimization than an action level of 0.015 mg/L and will likely contribute to a greater reduction in lead levels at those systems, thereby supporting more public health benefits that can be realized through CCT. Because the EPA finds that both 0.010 mg/L and 0.015 mg/L are technically possible for systems based on the data, the EPA cannot maintain an action level of 0.015 mg/L. Given the best available and most recent information, 0.015 mg/L would

not support the greatest level of health protection to the extent feasible for the CCT treatment technique compared to 0.010 mg/L. Additionally, because the EPA is removing the lead trigger level in the LCRI, a lead action level higher than 0.010 mg/L would result in CCT requirements applying for systems at higher lead levels relative to the 2021 LCRR (see section III.E of this preamble for the agency's anti-backsliding analysis).

Furthermore, a lead action level of 0.010 mg/L is supported by the available data. As noted in the proposal, the EPA acknowledges that when the agency selected 0.015 mg/L as the action level in the 1991 LCR, a small percentage of LSL systems with CCT in the dataset were able to meet this level. However, at that time, the EPA acknowledged the limitations of the available data including the small sample size (*e.g.,* 39 systems without LSLs and 11 systems with LSLs), and challenges of ''extrapolating generalized estimates of treatment performance . . . which are collected from relatively few, like-sized systems operated under relatively favorable natural water quality conditions'' (56 FR 26491, USEPA, 1991). Also, the EPA noted that the systems evaluated for the LCR were not yet attempting to minimize lead levels per the definition of OCCT in § 141.2. For the LCRI, the dataset to evaluate the action level is a much larger dataset compared to the 1991 LCR dataset, comprised of 90th percentile values collected under the requirements of the LCR, from systems of various sizes and OCCT and LSL status and is informed by analysis of lead samples that are all collected at LSL sites and a dataset from the State of Michigan that includes a similar sampling protocol as the LCRI. Therefore, this recent larger dataset is of higher quality than the 1991 LCR dataset for selection of the action level in LCRI, and the EPA finds that 0.010 mg/L is reasonably representative of lead levels that can be achieved in systems after they install OCCT.

The EPA also disagrees with commenters indicating that the EPA must use a different statistic to compare against the action level. In 1991, the EPA chose a 90th percentile statistic to simplify the LCR's requirements. Specifically, the EPA had considered using a 95th percentile but chose a 90th percentile value so that systems would not be required to perform a more complex calculation based on the results of the monitoring. For example, the 95th percentile of 30 samples is the 28.5th highest sample result whereas the 90th percentile is the 27th highest result. Additionally, water systems have decades of experience using and calculating 90th percentile values and submitting that information to States.

For these same reasons, the EPA does not agree that a measure of central tendency should be used in the rule. While the commenter claims that CCT efficacy can be evaluated through a central tendency statistic, changing the metric for evaluating CCT efficacy after over 30 years for implementation would likely cause confusion and compatibility issues with past datasets. Retaining a 90th percentile statistic maintains consistency, which enhances implementability. Furthermore, as discussed in section IV.F.1 of this preamble and in this section, an action level of 0.010 mg/L based on a 90th percentile supports the technical feasibility of the CCT treatment technique.

The EPA also disagrees with using a maximum lead value (*i.e.,* the highest collected sample) for comparison with the lead action level. Using a maximum value against the action level would mean that a single sample would prompt an action level exceedance. As discussed in section IV.A of this preamble, lead and copper levels at the tap are highly variable due to a variety of factors and a single tap sample at a single site is not necessarily representative of conditions in the system. As described in section IV.F.1 of this preamble, the purpose of the action level is to evaluate the CCT of the system. Therefore, using a single sample to prompt systemwide actions would not be appropriate.

The EPA notes that commenters suggesting a higher percentile state that doing so would result in more action level exceedances. In the LCRI, the EPA is finalizing requirements that will result in more action level exceedances relative to the LCR, including reducing the lead action level to 0.010 mg/L and new tap sampling protocol and tiering requirements. The EPA has considered the feasibility of the CCT treatment technique as a whole in the context of these changes (see section IV.F.1 of this preamble). Additionally, the agency disagrees with commenters who assert that water systems are not required to take actions when a percentage of collected samples are higher than the level used for the action level (*i.e.,* up to 10 percent of samples in a 90th percentile). The LCRI includes requirements at both individual sites and systemwide that are not dependent on the 90th percentile level. For example, water systems are required to conduct Distribution System and Site Assessment at sites exceeding 0.010 mg/L including when the system's 90th percentile is at or below the lead action level (see section IV.H of this preamble). Additionally, water systems are required to conduct public education independent of the water system's 90th percentile lead levels, such as providing information to consumers at all sites that are sampled regardless of the individual lead result (see section IV.J.4.b of this preamble) and including information about lead in the CCR (see section IV.O.1.c of this preamble). And importantly, under the LCRI, water systems must now also conduct lead and GRR service line replacement regardless of tap sample results (see section IV.B of this preamble).

ii. Additional Factors Supporting Selection of the Lead Action Level

The EPA also received comments on the anticipated benefits and tradeoffs of a lower action level, including for public health and administrative burden on systems and States. Some commenters supported an action level of 0.010 mg/L but noted that the lower action level will increase the number of systems required to conduct CCT actions, thereby increasing the burden on States and water systems. Some of these commenters expressed concern with reducing the action level below 0.010 m/L, citing technical challenges including the administrative burden on systems and States and the need to consider resources to implement other aspects of the rule including service line replacement. The commenters believed these issues would be exacerbated if the EPA selected an action level of 0.005 mg/L. Some noted factors such as the lack of national CCT expertise. Several States provided information about burden estimates for their States and impact to their operating budget for CCT requirements if the EPA were to decrease the action level to 0.005 mg/L. Some commenters disagreed, stating that because there is no safe level of lead, the public health benefits should be considered over any administrative burden or lack of expertise. A few commenters indicated that the EPA must base its determination of an action level based on what is both affordable for large metropolitan systems and technically possible to achieve and base a determination on every single water system, and that the EPA may not consider administrative burden or availability of technical experts as factors under the statute for selecting an action level. The commenters noted that even if there are concerns about the capacity of smaller water systems to study and install CCT, small systems are permitted to select an alternative compliance option besides CCT.

The EPA disagrees with commenters that the agency cannot consider factors such as administrative burden, availability of technical experts, and other technical factors in selecting the action level. In section IV.F.1 of this preamble, the EPA discussed the factors that impact technical feasibility, and how the agency introduced the concept of the action level, among other requirements, such that the CCT treatment technique is feasible in accordance with SDWA section 1412. The EPA is not evaluating the feasibility of the action level as an independent component, but rather in the context of the treatment technique as a whole (see section III.D.3 of this preamble). For the LCRI, the EPA considered technical challenges including administrative burden, availability of national experts, and the technological limitations of reliably measuring lead levels when selecting an action level that supports the overall feasibility of the CCT treatment technique. The final LCRI clarifies how the agency evaluated these factors consistent with the statutory feasibility standard (see section IV.F.1 of this preamble). The EPA disagrees that only large systems, compared to other size systems, must be considered for the purposes of determining what is feasible. While SDWA legislative history and case law specifies that a NPDWR must be affordable ''relative to a large regional or metropolitan water system,'' there is no such limitation for determining what is technically possible; and therefore, the best interpretation of the statute is the EPA should evaluate what is ''technically possible'' relative to all size systems. See section III.C of this preamble for the background on statutory authority and discussion of feasibility.

For the LCRI, the EPA considered the administrative burden on systems and States with respect to a lower action level, specifically for smaller systems that lack the technical resources of large systems and require additional State input and technical assistance. As discussed in section IV.F.1 of this preamble, the EPA found that requiring all water systems to study and install OCCT without considering their tap levels would ''impose an unworkable administrative burden on States'' (56 FR 26492, USEPA, 1991). This was particularly compelling for small and medium systems because of the technical challenges many of those systems may face meaning they ''generally will require the most extensive input from States in evaluating, selecting, and overseeing implementation of optimal corrosion control treatment'' (56 FR 26492, USEPA, 1991). Therefore, State capacity to provide this input and support to water systems affects the feasibility of the CCT treatment technique for water systems.

For the LCRI, the EPA used data from the 6,551 water systems of all sizes with known CCT and LSL status and reported 90th percentile values in SDWIS from 2012–2020 (see Exhibit 2) to select 0.010 mg/L as a level that is generally representative of OCCT as the lead action level. To further inform whether the selected level of 0.010 mg/L supports the action level's purpose of addressing the technical feasibility of the CCT treatment technique, the EPA used the same data to estimate how many CWSs are likely to exceed various potential action levels nationally to demonstrate the estimated burden on systems and States (see Exhibits 4.1 and 4.2, USEPA, 2024d).

CCT requirements may take systems several years to complete and include multiple interactions with the State. The administrative burden for the State includes activities, such as reviewing CCT study results, setting OWQPs, and reviewing OWQP data (USEPA, 2024a, chapter 4, section 4.4.3). Particularly for LSL systems, CCT studies can require additional time and technical expertise (*e.g.,* conducting pipe rig/loop studies), which in turn will likely require additional State oversight. The EPA estimated that a higher percentage of systems are estimated to exceed 0.010 mg/L than 0.015 mg/L nationally, but it is not a significant increase (see Exhibit 4.2, USEPA, 2024d). While this will increase burden on systems and States relative to retaining an action level of 0.015 mg/L, more benefits can be realized through more systems evaluating and installing CCT. Conversely, the number of systems expected to exceed 0.005 mg/L is almost double that of 0.010 mg/L and triple that of 0.015 mg/L. Systems are expected to exceed in each system size category, and the EPA expects the number of systems to exceed 0.005 mg/L would exacerbate existing technical challenges for both systems and States. Thus, lowering the action level beyond 0.010 mg/L could affect the State's ability to provide meaningful input to individual systems and adequately oversee OCCT implementation statewide and consequently impact the technical feasibility for water systems. Based on updated data and over 30 years of LCR implementation experience, the EPA finds that while a lead action level of 0.010 mg/L will increase the burden on water systems relative to 0.015 mg/L, that burden is technically possible to the extent feasible to support the EPA's determination that the CCT treatment technique is feasible in accordance with SDWA (see section IV.F.1 of this preamble).

As discussed in the LCRI proposal, the EPA also considered that the significant State resources required to oversee OCCT studies and implementation could affect the State's ability to oversee other proposed requirements in the LCRI (88 FR 84942, USEPA, 2023a). Specifically, the EPA is concerned that if the agency sets the action level at a level that may not be generally representative of OCCT (*e.g.,* 0.005 mg/L), that too many water systems would be required to conduct a detailed demonstration to determine OCCT, which would impact their ability to reduce lead levels through service line replacement and other actions under the rule due to competing resources, and that this could result in less public health protection overall. For example, if a significant number of small water systems were simultaneously required by the State to conduct CCT studies and take other actions associated with an action level exceedance, it could strain State resources to simultaneously oversee requirements for full lead and galvanized service line replacements, which are the most significant source of lead in drinking water, where present. The EPA estimates that a higher percentage of systems with LSLs (both with and without CCT) nationally, will exceed each of the action levels evaluated as compared to those without LSLs, and may require additional technical assistance (Exhibit 4.1., USEPA, 2024d). This is especially compelling at 0.005 mg/L because the EPA has estimated that 0.005 mg/L is not generally representative of OCCT, particularly for systems with LSLs (see Exhibit 2). Therefore, water system resources would be better directed towards reducing lead levels through service line replacement, and therefore, achieving greater health protection, rather than attempting to optimize or re-optimize OCCT when above 0.005 mg/L because it may not lead to a reduction in lead levels for system who are optimized above 0.005 mg/L. Conversely, almost twice the percentage of the systems with LSLs and CCT in Exhibit 2 meet 0.010 mg/L compared to 0.005 mg/L, so there is a higher potential for lead reduction in systems optimizing or re-optimizing OCCT when above 0.010 mg/L. The EPA notes that regardless of the value of the lead action level, States will also have an increased level of administrative burden in the

final LCRI relative to the current rule due to requirements for water systems to conduct service line replacement along with other additional public education requirements (USEPA, 2024a, chapter 4, sections 4.4.4 and 4.4.6). Additionally, while large systems are typically more technologically sophisticated and have access to more resources than small and medium systems, there will be large systems with LSLs that will need to conduct pipe rig/loop studies as a result of the rule. Commenters representing States and water systems have noted that few States and systems have experience with these types of complex studies, which likely will also require additional oversight (see section IV.F.1 of this preamble for discussion of CCT study requirements).

In the proposed LCRI, the EPA discussed the national availability of technical experts as an additional factor to consider in setting the action level in terms of how the action level prompts systems to conduct detailed demonstrations of OCCT (88 FR 84942, USEPA, 2023a). The EPA is concerned that constraints on the availability of expertise would pose significant challenges if the action level were reduced to 0.005 mg/L. The EPA notes that some States and water systems indicated that lack of technical expertise was one reason why the agency should not lower the action level to 0.005 mg/L. As discussed in section IV.F.1 of this preamble, small systems are unlikely to have in-house experts to design corrosion control optimization and may lack staff with relevant experience in installing and operating OCCT. The ability to hire outside experts is limited by national availability. The EPA received comments offering suggestions for actions the EPA can take to incentivize additional training of CCT experts. However, the commenters did not explain how this gap could be addressed by the LCRI rule compliance date. The EPA notes that knowledge of relevant chemistry alone is usually not sufficient to perform comprehensive CCT studies and operation. Experts typically rely on knowledge gained through practical on-the-job experience that cannot otherwise be replicated. The EPA anticipates that systems and States would encounter challenges acquiring this technical expertise, if too many systems are simultaneously conducting CCT evaluations, such as with an action level of 0.005 mg/L.

The EPA notes that some States provided their own estimates of administrative burden based on action level exceedances in public comments in support of these considerations. One State noted that there are 640 water systems in their State subject to lead and copper sampling. They noted that there have been 117 action level exceedances since 2013 (18.3 percent of systems), but that if the action level were 0.005 mg/L, almost half of their water systems would have been required to study and install CCT. They also noted that CCT requires higher certification levels for operators and additional on-going training. Another State indicated that a lower action level would require more systems to conduct detailed OCCT demonstrations and thereby increase the need for State interaction by two to five times depending on the final action level, thus requiring additional staff and increases to State operating budget for CCT requirements alone. Specifically, they stated that a decrease in the action level to 0.005 mg/L would lead to a six percent increase in their personnel and indirect cost budget that would require additional funding. As discussed in section IV.F.1 of this preamble, the action level construct is intended to address the technical challenges associated with CCT. The EPA has determined that an action level of 0.010 mg/L would support the treatment technique for CCT, in addition to other elements of this treatment technique, in meeting the feasibility standard at SDWA section 1412(b)(7)(A). For the reasons discussed above, the EPA has determined that if the agency set the action level at 0.005 mg/L, the action level would not function as intended to address the described technical challenges in a way that makes the CCT treatment technique feasible. The EPA has considered these additional factors relating to technical feasibility and for the reasons described above is revising the action level to 0.010 mg/L and not 0.005 mg/L, and is not retaining the LCR action level of 0.015 mg/L.

Removal of Lead Trigger Level

The EPA received comments indicating almost universal support for removing the lead trigger level. Commenters generally agreed that the trigger level increased the rule complexity and some noted the confusion of explaining two separate lead levels to the public.

For the final LCRI, the EPA is removing the lead trigger level. The EPA introduced the lead trigger level in the 2021 LCRR to take certain actions including optimizing or re-optimizing OCCT, replacing LSLs, and educating or notifying the public. The purpose of the trigger level was to prompt proactive actions including conducting CCT studies, re-optimizing OCCT, and conducting goal-based LSLR to prepare for a more rapid response should they later exceed the lead action level (88 FR 84939, USEPA, 2023a). The EPA agrees with commenters that the trigger level increased the complexity of the rule and that explaining the purpose and function of trigger level would likely be challenging for water systems and confusing to the public. The EPA also notes the redundancy of several of the actions in LCRI, including the new requirement for water systems to conduct mandatory lead and galvanized service line replacement regardless of lead levels, with actions that would have resulted if the agency kept the trigger level from the 2021 LCRR.

Separate Action Level for Public Education

In the proposed LCRI, the EPA requested comment on whether the agency should use a different action level to trigger public education activities compared to CCT. Many commenters disagreed with the concept of establishing a separate action level for public education, with some noting that it would increase complexity of the rule. However, many commenters also emphasized that the action level is not a health-based level and that the MCLG is set at 0 mg/L, while citing the health benefits of public education at lower levels. One commenter supported the selection of 0.010 mg/L as an appropriate level to prompt CCT evaluation but supported selection of a lower level for water systems to be required to conduct public education activities for that reason.

The EPA agrees that establishing a separate action level for public education would increase the complexity of the rule. In the final LCRI, the EPA is finalizing a single lead action level at 0.010 mg/L. The EPA agrees with commenters that the action level is not a health-based level but rather is set at a level that is generally representative of OCCT. The EPA noted in the LCR that while water system actions including CCT are expected to reduce lead drinking water levels, ''there are situations where elevated lead levels will persist at consumers' taps during or even after these efforts'' (56 FR 26500, USEPA, 1991). For the LCRI, the EPA requires the use of the action level for some systemwide public education activities but has added new requirements that are intended to strengthen the public education requirements. These include clear statements that there is ''no safe level of lead'' in public education materials, and additional public education requirements that are not associated with the action level that are intended

to reduce exposure to lead in drinking water. Public education requirements that are not triggered by a lead action level exceedance include information about lead in the CCR, notification of lead, GRR, and unknown service lines, and notification of tap sample results. These communications include information on the health effects of lead and steps consumers can take to reduce exposure. See section IV.J.1 of this preamble for a discussion of the feasibility of the public education treatment technique and sections IV.J.4 and IV.O.1 of this preamble for a discussion of the final LCRI public education and CCR requirements, respectively.

c. Final Rule Requirements

For the LCRI, the EPA is finalizing the lead action level of 0.010 mg/L. The EPA is also finalizing the revision to remove the lead trigger level of 0.010 mg/L that was previously introduced in the 2021 LCRR, such that there is a single level used to prompt water system actions in the final rule for LCRI. For discussion about the specific CCT, public education, and tap sampling requirements that water systems will be required to follow based on lead action levels, see sections IV.F.2, IV.F.3, IV.J, and IV.E of this preamble, respectively.

G. Water Quality Parameter Monitoring

1. Rationale and Proposed LCRI Revisions

Water quality parameters (WQPs) are an important component of the treatment technique for CCT because they are monitored to gauge CCT implementation to ensure its continued effectiveness. WQPs can include pH, alkalinity, orthophosphate, and silicate. OWQPs are the values of the WQPs that are associated with optimized or re-optimized OCCT. Systems must monitor WQPs at taps and at entry points to the distribution system for pH and, when applicable, alkalinity, orthophosphate, silica, and any additional parameter set by the State.

Under § 141.87, the proposed LCRI would require all systems with OCCT serving 10,001 to 50,000 persons to monitor for WQPs regardless of the lead and copper levels, except those systems whose 90th percentile lead level is at or below the PQL of 0.005 mg/L, in accordance with § 141.81(b)(3). This proposed change would increase the number of water systems conducting WQP monitoring. Systems serving greater than 50,000 persons are already required to monitor for WQPs regardless of lead and copper levels, unless deemed optimized under § 141.81(b)(3). By extending this requirement to all water systems with OCCT serving greater than 10,000 persons, any changes in WQPs could be evaluated more quickly to determine if re-optimizing OCCT is warranted; this could reduce the time needed for water systems serving between 10,001 and 50,000 persons to evaluate and optimize OCCT under the LCRI. The EPA proposed to maintain the authority for States to require any system, including a system serving 10,000 persons or fewer, to monitor WQPs more frequently and/or with more parameters beyond the minimum requirements of the rule.

Also, the proposed LCRI clarified that States can designate additional WQPs to determine the effectiveness of CCT (*i.e.,* in addition to pH or an orthophosphate residual). While this requirement was included in the LCR (and maintained in the LCRR) under § 141.82, the proposed LCRI revisions were intended to clarify the implementation of this already available option by including the designation of State-specified parameters in the list of required parameters under § 141.87.

The proposed LCRI did not change the 2021 LCRR requirement to add WQP monitoring sites to the sites that must be sampled by a system in each WQP monitoring period when those sites are sampled as a result of activities under DSSA in § 141.82(j). The purpose of keeping these new sites in the monitoring pool, until the pool is at least twice the number of minimum monitoring sites required under § 141.87(b)(1)(i), is to ensure that sites with previous high lead levels are fully benefitting from installed CCT.

2. Summary of Public Comments and the EPA's Responses

The EPA received comments recommending the EPA require WQP monitoring for more systems, such as requiring all systems, regardless of CCT status, to conduct WQP monitoring. The EPA disagrees with requiring systems without OCCT installed to monitor for WQPs because the purpose of monitoring for WQPs is to ensure optimal operating parameters for CCT. Monitoring for WQPs in systems without OCCT would have little benefit since there would be no State-approved parameters that would represent the optimal range for CCT performance as developed through a prerequisite CCT study; therefore, there would be no baseline parameters for comparison. Another commenter requested that small systems be required to continue WQP monitoring once they have started, such as following a lead action level exceedance. The EPA recognizes that continuous WQP monitoring can be beneficial for some small systems with OCCT by offering more frequent feedback regarding their CCT implementation. Therefore, in the LCRI, the EPA has maintained the authority for States to require small systems with or without designated OWQPs to start or continue WQP monitoring beyond the minimum requirements of the rule (§ 141.87(b)(4)(iv) and (b)(3)(iii), respectively). However, the EPA disagrees with requiring small systems to continue to conduct WQP monitoring regardless of lead levels due to the limited resources of small systems. WQP monitoring and compliance lead and copper tap sampling are two methods for monitoring OCCT. To balance the trade-off between monitoring and burden, all small systems are required under the LCRI to continually monitor lead and copper through tap sampling (see section IV.E of this preamble). In comparison, only those small systems with CCT with the most concerns of high lead or copper levels, by exceeding a lead or copper action level, are required to monitor WQPs under LCRI (§ 141.87(b)(4)(ii)). Additionally, any system with individual sites exceeding the action level must add those sites to the ongoing list of locations monitored for WQP parameters (§ 141.87(b)(1)(i)). Under LCRI, small systems that are allowed to stop WQP monitoring and subsequently restart must sample at the list of locations that includes added sites, thus offering added public health protection to ensure that installed CCT is reaching all sites within the distribution system. Lastly, since not all small systems will need to install CCT following an ALE, such as those opting for small system flexibility, continued WQP monitoring would cause undue burden on those systems which, due to a lack of WQP baseline based on designated CCT, receive no benefit from WQP monitoring. The WQP monitoring requirements for small systems in the final LCRI allow small systems to prioritize limited resources for determining whether WQPs are within designated OWQP ranges in a way that is technically possible for these size systems in contrast to larger systems and ensure protection of public health by prioritizing small systems with the highest lead and copper concerns.

The EPA received comments stating that calcium, conductivity, and temperature should be re-added to the list of required parameters for WQP monitoring for the reason that these parameters have the potential to affect lead release. The 2021 LCRR removed

calcium carbonate stabilization as an option for CCT and therefore, the requirement to monitor associated WQPs related to calcium hardness (*i.e.,* calcium, conductivity, and temperature) were also eliminated. In the 2021 LCRR, the EPA agreed with commenters that said calcium carbonate stabilization has not been shown to be an effective corrosion control treatment strategy (USEPA, 2020e). The EPA continues to agree there is a lack of support in the available literature for the use of calcium carbonate stabilization in reducing tap lead levels. For LCRI, the EPA is incorporating the 2021 LCRR determination to remove calcium carbonate stabilization as an option for CCT and excluding calcium, conductivity, and temperature from WQP monitoring. As described in the preamble to the 2021 LCRR, systems that have State-designated OCCT based on calcium carbonate stabilization can continue to rely on the designated treatment, including monitoring of any State-designated parameters in addition to the minimum rule requirements (86 FR 4230, USEPA 2021a). However, as calcium carbonate stabilization is no longer an option for OCCT as finalized in the 2021 LCRR, systems that exceed the action level may not re-optimize using calcium carbonate stabilization. With the removal of the treatment option, calcium, conductivity, and temperature are not relevant for most systems and requiring monitoring of these parameters is unnecessary. The EPA also received comments to streamline and simplify the list of required parameters, further supporting the EPA's decision to not add previously removed parameters.

The EPA received comments on the requirement at § 141.87(b)(1)(i) for systems to add WQP monitoring sites to the standard minimum number of sites required to be sampled during each WQP monitoring period when those sites were sampled for WQP parameters under the DSSA. These commenters cited concerns that this requirement could result in a continuously changing minimum sampling pool and increase overall rule complexity for systems. The EPA disagrees with removing this requirement because the relatively few number of sites that could be added as a result of monitoring under DSSA is technically possible for systems and a reasonably ensures that the public health protection associated with ensuring OCCT is fully implemented throughout the distribution system. The standard number of monitoring sites for WQPs ranges from one site for systems serving 500 or fewer persons to 25 sites for systems serving greater than 100,000 persons. The maximum possible number of required monitoring sites is 50, which the EPA finds to be technically possible for the largest systems. The additional number of added sites is capped at not more than twice the minimum number of sites per system size. Therefore, the EPA is retaining the 2021 LCRR requirement to require systems to conduct ongoing sampling at added sites to monitor OCCT implementation at sites in the distribution system with past elevated lead levels. The EPA disagrees that the minimum sites would be continuously changing or overly complex for systems since sites are only added as a result of DSSA, and changes to the monitoring pool require a State determination to switch out sites for newer ones that can better assess effectiveness and/or remove sites during sanitary survey evaluation of OCCT § 141.82(j)(1)(ii)(B).

The EPA also received comments requesting that WQP monitoring generally play a larger role in the rule, such as being used to assess CCT in place of lead and copper tap sampling. The EPA disagrees that WQP monitoring should be used in lieu of lead and copper tap sampling because the agency continues to find that both lead and copper tap sampling and WQP monitoring must be used to evaluate CCT performance in accordance with the LCRI requirements for systems. Tap sampling and WQP monitoring provide systems and States with different data points that are critical to inform different aspects of CCT. WQP monitoring provides data to evaluate if OCCT is implemented with sufficient levels of corrosion control throughout the distribution system. Lead and copper tap sampling offers direct data about OCCT effectiveness; namely, the levels of the contaminants for which corrosion is being controlled. Thus, the EPA maintains that WQPs alone are not sufficient for evaluating OCCT performance for any system, and that lead and copper tap sampling continues to be a necessary component of the LCRI and NPDWRs for lead and copper to evaluate CCT.

The EPA also received comment requesting systems be required to make WQP monitoring results publicly available to increase system transparency and public accountability. The EPA disagrees that making WQP monitoring results publicly available would result in meaningful benefits for public awareness and education because interpreting WQP results requires technical and system-specific knowledge of the CCT as designed. Communicating to the public-at-large how to interpret WQP monitoring data would require additional information and potential technical support. More relevant to consumers is information about whether the system has met their designated OWQP range; systems with more than nine OWQP excursions, that is, WQP readings outside the designated range, in a monitoring period must issue a Tier 2 public notification in accordance with § 141.203 and must report the violation in their CCR. Thus, the EPA finds that the burden on systems to make WQP results publicly available in a meaningful way along with the necessary context for interpretation of the results would outweigh the potential benefits.

Commenters requested that systems be required to collect additional information under WQP monitoring to better inform them about their CCT, including by monitoring for WQP parameters at taps more frequently, such as monitoring for WQPs during each tap sampling period or increasing WQP monitoring at taps to quarterly. Commenters also recommended additional monitoring requirements for WQP parameters in untreated source water (*i.e.,* at the point of water intake). The EPA does not agree to changes to WQP monitoring at taps because the LCRI requires systems to sample at a regular frequency throughout the monitoring period for consistent and continuous monitoring of WQPs and to reflect seasonal variability of source water quality (§ 141.87(a) through (c)). While CCT is designed to account for seasonal variability, sampling for WQPs at one point in time does not offer information about CCT implementation at another point in time. Unanticipated interactions between seasonal factors, source water quality, and CCT implementation can result in WQP excursions even when previous samples fall within OWQP ranges. The LCRI also continues to require the addition of monitoring sites when systems sample sites under Distribution System and Site Assessment, with a maximum number of sites twice the standard minimum required (§ 141.87(b)(1)(i)). These requirements ensure that system monitoring is prioritized by establishing sampling sites and a sampling frequency that targets information collection most beneficial to monitoring OCCT implementation. The EPA has also previously heard in public comments for the LCRR review that conducting distribution system sampling of WQPs within homes is difficult, particularly because certified samplers are required. The EPA does not agree that benefits from further increasing the WQP tap

sampling requirements will outweigh the additional burden of in-home sampling. Lastly, the EPA does not agree that mandatory monitoring for WQP parameters at the water intake is necessary to ensure proper implementation of OCCT because OCCT is designed to alter the composition of treated water. WQPs in untreated water are neither an indication of corrosivity in the finished water, nor an indicator of the effectiveness of OCCT implementation. Independently, system operators may choose to monitor water at the point of intake to assist implementation of OCCT, but the EPA does not agree that such monitoring should be required of all systems with OCCT. The EPA agrees that switching source water can raise issues with OCCT; therefore, the LCRI requires systems with an upcoming addition of new source water or long-term change in treatment to notify States and to resume standard monitoring for lead and copper (§§ 141.90(a)(4) and 141.86(c)(2)(iii)(G), respectively). This allows States to modify designated CCT, as necessary.

3. Final Rule Requirements

The final LCRI requires all medium systems with OCCT to continually monitor WQPs, with an exception for medium systems whose 90th percentile lead level is at or below the PQL of 0.005 mg/L, in accordance with § 141.81(b)(3). In the final rule, large and medium systems (systems serving greater than 10,000 persons) with OCCT are required to conduct WQP monitoring, and small systems serving 10,000 or fewer persons with OCCT must conduct WQP monitoring after exceeding the action level. The final rule maintains the 2021 LCRR provision that provides State authority to set additional WQPs beyond those specified in the rule, and to require any system with OCCT to conduct WQP monitoring more frequently and/or for more parameters than those required by the rule.

The final rule also incorporates the 2021 LCRR requirements for systems with OCCT conducting WQP monitoring for DSSA under § 141.82(j) (formerly known as ''find-and-fix'') to add those sites to the WQP monitoring sampling pool. Systems are not required to add DSSA sites if the number of sites in the sampling pool is at least twice the standard minimum number of samples. See section IV.H of this preamble for further discussion on DSSA requirements.

H. Distribution System and Site Assessment

1. Rationale and Proposed LCRI Revisions

In the 2021 LCRR, the EPA introduced the ''find-and-fix'' provision for the first time in a lead and copper NPDWR to potentially identify the cause of and actions to address localized elevated lead levels in drinking water. More specifically, this provision requires water systems to collect follow-up tap samples at sites where lead levels exceed 0.015 mg/L under the LCRR tap sampling. The 2021 LCRR requires water systems to collect follow-up lead tap samples no more than 30 days after they receive the results of the sample that exceeds 0.015 mg/L. The water system must also sample at a new WQP site that is on the same size water main in the same pressure zone and located within a half mile of the location with the action level exceedance within five days of receiving the sample results. Small water systems without CCT have up to 14 days to collect the samples. Water systems must also attempt to determine the cause of the exceedance and propose an action or a ''fix'' to address the cause of the exceedance. Further, States have six months to approve any action recommended by a system or require the system take an alternative action.

For the LCRI, the EPA proposed to maintain the requirement for systems to collect follow-up tap samples at sites that exceed the lead action level, specified as 0.010 mg/L. The EPA heard concerns in the LCRR review and stakeholder engagements held to inform the agency's development of the proposed LCRI that the term ''find-and-fix'' is an inaccurate title for this section and should be changed because it implies the water system will or be able to implement the ''fix'' in all cases (USEPA, 2023i). For example, one stakeholder commented on how the cause of the lead level could be a premise plumbing issue that the water system may not be authorized to ''fix.'' Recognizing that the ''fix'' to address the exceedance may be outside of the control of the water system, among other potential implementation challenges, the EPA proposed to rename this section, ''Distribution System and Site Assessment'', to more accurately reflect these requirements. Consistent with the EPA's proposed change to the lead action level for the LCRI, systems would be required to conduct the DSSA requirements for any sampling site that exceeds 0.010 mg/L.

In addition, the EPA proposed to clarify the requirements under the 2021 LCRR for assessing CCT under Step 1 at § 141.82(j)(1). Specifically, the EPA proposed that systems would be required to identify a DSSA WQP sample location within a half-mile ''radius'' of each site with a test result above 0.010 mg/L. The 2021 LCRR required sample locations be within a half-mile of the location with an action level exceedance of 0.015 mg/L. The proposal added ''radius'' and clarified the lead action level of 0.010 mg/L.

The proposed LCRI also maintained the requirement from the 2021 LCRR that systems serving 10,000 persons or fewer without CCT can have up to 14 days from the date they receive sample results above the action level to take WQP samples in the distribution system as opposed to the other systems serving more than 10,000 persons that only have 5 days (§ 141.82(j)(1)).

2. Summary of Public Comments and the EPA's Responses

The EPA received comments noting concern for the number of systems, especially small systems, that would be triggered into this requirement from individual tap samples exceeding 0.010 mg/L. Commenters requested that States be provided discretion to forego this requirement for small systems if the underlying cause of the action level is clear by evaluating monthly reporting. Other commenters noted the DSSA requirement should be triggered by a lower level of lead, such as the PQL. The EPA disagrees that States should be provided discretion to forego the DSSA requirements. Identifying sources of lead in drinking water is a critical component to mitigating lead and improving public health protection. Also, a system may not exceed the lead action level, but can still have 10 percent of tap samples above 0.010 mg/L and it is important to understand whether it is a localized problem or is due to water quality issues in the distribution system. To reduce the burden of the DSSA requirements the EPA is maintaining the 2021 LCRR provision that caps the number of distribution system WQP sites in response to DSSA requirements that must be added to twice the minimum number of required WQP sites. The final LCRI also removes requirements for WQP monitoring for systems without CCT. In addition, the EPA is maintaining the provision that systems in the process of optimizing or re-optimizing do not need to submit treatment recommendations to the State as they are already undergoing treatment processes to reduce lead exposures in drinking water.

The EPA received comments requesting that the DSSA WQP monitoring be scaled back from the requirements proposed in LCRI. Some commenters suggested States should be given discretion to require when systems take DSSA actions. The EPA disagrees with scaling back DSSA WQP monitoring actions beyond the proposed requirements or leaving the decision to the State because the EPA finds that all of the current requirements are necessary to evaluate elevated levels of lead. As described in the 2021 LCRR, the intent of the required WQP sample for water systems with CCT is to help determine if CCT is optimized, if additional WQP sites are needed, and/or if WQPs set by the State are being met (86 FR 4235; USEPA 2021a). However, the EPA notes the DSSA requirement includes provisions that address some concerns raised by commenters. The minimum number of required sites ranges from 1 to 25 sites, therefore doubling leads to a range of 2 to 50 sites as the maximum. This is less than the required number of monitoring sites for total coliform in the distribution system; therefore, this requirement is not requiring water systems to sample at a number of sites that they have not already shown to be capable of handling. The proposed and final rule language provides States with discretion to determine whether these additional newer sites can better assess the effectiveness of CCT once the system has reached the cap (§ 141.82(j)(1)(ii)(B)).

Other commenters requested that the rule clarify whether only systems required to meet OWQPs to demonstrate OCCT would need to potentially add new sites under DSSA requirements in § 141.82(j)(1)(ii)(B). The addition of WQP sites under § 141.82(j)(1)(ii)(B) only applies to systems required to meet OWQPs to demonstrate OCCT. Therefore, the EPA revised the final DSSA rule requirements to include a statement that systems without CCT do not have to collect WQP data. These systems would not typically have OCCT or any pH, alkalinity adjustment, or inhibitor addition processes. Since they would not be adjusting these parameters in response to a sample over 0.010 mg/L, the EPA expects WQP monitoring would be unlikely to catch any short-term variations of these parameters in the natural water quality, especially up to 14 days after the system receives the tap sampling results. In addition, these systems would not have any State-designated optimized WQPs to compare against new WQP sampling results.

3. Final Rule Requirements

The EPA is finalizing the revision to rename this section, ''Distribution System and Site Assessment'' to more accurately reflect these requirements. The EPA is finalizing the clarification under Step 1 for assessing CCT that requires water systems to take a DSSA WQP sample at a location within a half-mile ''radius'' of each site with a lead result above 0.010 mg/L. In addition, the EPA revised the final LCRI to exclude small systems without CCT from conducting the WQP monitoring under Step 1 of the DSSA process. These systems are still required to conduct the other steps of the DSSA process.

I. Compliance Alternatives for a Lead Action Level Exceedance for Small Community Water Systems and Non-Transient Non-Community Water Systems

1. Rationale and Proposed LCRI Requirements

In the 2021 LCRR, the EPA included alternative compliance options for systems serving 10,000 or fewer persons and all non-transient non-community water systems (NTNCWS) where a State or Tribe that has primacy elects to adopt the alternative compliance provision. Systems that exceed the lead trigger level must choose among four compliance options: replace all lead service lines within 15 years, install and maintain optimal CCT, install and maintain point-of-use treatment devices at each household or building, or replace all lead-bearing plumbing materials on a schedule specified by the State but not to exceed one year. States seeking primacy are not required to adopt the compliance alternative provision in which case systems must comply with the requirements for OCCT and LSLR in the 2021 LCRR. While the EPA previously determined that OCCT is an affordable technology for water systems of all sizes (see section IV.F.1.a of this preamble) (USEPA, 1998b), small systems may still have technical difficulties implementing this technology. The agency recognizes that it is often difficult for smaller systems to find operators that have the advanced skills to implement and maintain OCCT. Additionally, smaller systems may face challenges retaining those operators once they have acquired advanced skills. Because maintaining OCCT is an ongoing process and finding and retaining skilled operators can be especially challenging for very small systems (systems serving 3,300 or fewer persons), point-of-use filtration and plumbing replacement options may be better options for some systems. Operator turnover or poor oversight of OCCT can reduce the effectiveness of the system's ability to prevent lead corrosion, even resulting in increases of lead in drinking water (USEPA, 2016b). Because of the challenges that small systems face in implementing OCCT, point-of-use devices and plumbing replacements can be effective alternative compliance technologies for small systems, and therefore, the rule allows systems the option to seek State approval to use one of them as an alternative to OCCT.

The EPA proposed in the LCRI to maintain a compliance flexibility provision in § 141.93 with some modifications. The EPA proposed to lower the eligibility threshold for CWSs from those serving 10,000 or fewer persons to 3,300 or fewer persons. Due to the proposed LCRI requirement to replace all LSLs irrespective of lead levels, the EPA also proposed to remove LSLR as an option for small system compliance flexibility. The proposed LCRI compliance alternatives to OCCT include installing and maintaining point-of-use devices or replacement of all lead-bearing plumbing. If a system chooses, and a State approves the point-of-use device compliance option, the system would be required to provide, install, and maintain the device(s) in each household and each building served by the water system, including monitoring one third of the point-of-use devices each year, with all devices being monitored within a three-year cycle. In addition, the system must provide public education regarding how to use the device. If the system has control over all plumbing in its buildings, and is not served by lead, galvanized requiring replacement, or unknown service lines it may seek State approval to implement the replacement of lead-bearing plumbing compliance option. In that case, the water system would be required to replace all plumbing that does not meet the definition as ''lead free'' on a schedule established by the State not to exceed one year.

In the LCRI, the EPA proposed to make these alternatives available to CWSs serving 3,300 persons or fewer persons and all NTNCWSs that have had an action level exceedance. This is because the EPA has determined that the point-of-use device and replacement of lead-bearing plumbing options are impractical for systems serving 3,301 to 10,000 consumers (88 FR 84878). If systems that request the use of an alternative have OCCT, they would still be required to operate and maintain it until the State determines, in writing, that it is no longer necessary.

The EPA also proposed to consolidate the small system flexibility provisions in § 141.93 and remove cross-references to § 141.93 in other rule sections (except for those in § 141.90). This approach comports with the EPA's goal in the 2021 LCRR review notice of simplifying the rule and streamlining rule requirements. It also recognizes that States seeking primacy for the LCRI are not required to adopt the small system compliance flexibility provision. It will be helpful for the small system flexibility provision in the Federal rule to be separate and therefore severable from the remainder of the LCRI because it would allow those States to incorporate the LCRI by reference without the need for extensive revisions to the remainder of the LCRI.

2. Summary of Comments and the EPA's Response

Some commenters agreed with maintaining small system flexibility because of the financial, administrative, and economic challenges small systems may face and how the LCRI addresses this by giving small systems the option to choose either point-of-use device installation or replacement of lead-bearing plumbing instead of re-optimizing OCCT. One comment expressed concern that small system flexibility provisions would be more burdensome as small systems would need more expertise to implement the alternative compliance options. Another comment stated that alternative compliance options are less stringent and that small systems should still implement CCT and LSLR.

The EPA agrees with commenters supporting the inclusion of a small system flexibility and disagrees that it would be a burden for small systems to implement. Small CWSs and NTNCWSs tend to have more limited technical capacity to implement complex treatment technique rules such as the LCR (USEPA, 2011b). For instance, great expertise is needed for systems to identify the OCCT and WQP monitoring to assure that lead and copper levels are reduced to the extent feasible. The determination of the OCCT is specific to each water system because it is based on the specific chemistry of the system's source water and must be designed and implemented to take into account treatments used to comply with other applicable drinking water standards (56 FR 26487, USEPA, 1991). System operators that do not already have it may be required to obtain advanced certification to properly operate and maintain OCCT.

Many small CWSs face challenges in reliably providing safe drinking water to their customers and consistently meeting the requirements of SDWA and NPDWRs (USEPA, 2011b). Long-term compliance challenges affect public health protection. Therefore, small system flexibility provides small systems alternatives to CCT that may be more easily implementable while still being effective in minimizing lead in water.

The EPA disagrees that the alternative compliance options would not be as protective as OCCT. While the EPA has determined that CCT is a feasible treatment technique for all system sizes, for systems serving 3,300 or fewer persons, the EPA determined point-of-use filtration and replacement of all lead-bearing plumbing can be as effective as CCT in minimizing exposure to lead in water for small systems (88 FR 84945, USEPA 2023a; SDWA section 1412(b)(7)(A)).

Commenters provided feedback on the EPA's proposed eligibility threshold for the small system flexibility alternatives. Some commenters were in favor of the proposed threshold of 3,300. Other commenters noted 3,300 was too high of a threshold for systems to effectively implement the compliance alternatives. Some of these commenters recommended a threshold closer to 500 persons. Other commenters prefer a threshold of 10,000 as in the 2021 LCRR. One stated justification for raising the threshold to 10,000 was that it maintained the flexibility for systems that could implement the alternatives and that systems would not implement the alternatives if not feasible for them. Commenters also stated the EPA should not set a threshold for CWSs as the agency did not set a size threshold for NTNCWSs.

The EPA agrees with commenters that support a small system threshold of 3,300 and agrees with commenters stating it is not likely practical or effective for systems serving more than 3,300 persons to implement the compliance options remaining after the removal of LSLR. In addition, the point-of-use provision and the replacement of all lead-bearing plumbing compliance alternatives are not easily implementable by water systems serving over 3,300 persons. In the LCRI proposal, the EPA described an example scenario in which a system that serves 3,301 consumers would have to provide and maintain approximately 1,000 point-of-use devices (88 FR 84878, USEPA, 2023a). Every year, at least 300 point-of-use devices would have to be monitored by the water system, which would require a significant coordination effort and over 300 household visits by the water system. The burden required to undertake this compliance alternative and implement it correctly would be difficult for a water system serving more than 3,300 persons to carry out given financial, administrative, and technical limitations. To implement the replacement of lead-bearing plumbing, the system would have to own or have access to replace all premise plumbing in the residences and buildings they serve, which the EPA expects would be highly unlikely for water systems serving over 3,300 persons. The final small system compliance options are impractical for systems serving more than 3,300 persons and will not likely be effectively implemented as an alternative to OCCT as system size increases.

The EPA disagrees with commenters advocating for a lower eligibility threshold in the LCRI, however, nothing in the LCRI precludes States from using a lower eligibility threshold. The EPA determined the small system alternatives could be effectively implemented by systems serving up to (and including) 3,300 consumers. Nevertheless, this may not be the case for some small systems, which is also why the State must approve any small system alternative. For instance, point-of-use devices have been recognized by the EPA as effective and affordable variance technologies for water systems serving up to 3,300 consumers (USEPA, 1998b). These treatment techniques are as effective at lead risk reduction for this category of systems as OCCT. For replacement of lead-bearing plumbing, for many small systems serving 3,300 persons or under, it is more likely they may control or have access to all the water infrastructure to make any necessary replacements compared to systems serving more than 3,300 persons. In contrast, systems serving more than 3,300 persons are less likely to face the same challenges with maintaining CCT than smaller systems, but they would face more challenges in implementing a system-wide point-of-use or plumbing replacement option than systems serving 3,300 or fewer persons that meets the requirements associated with those options. Given those implementation challenges, for systems serving more than 3,300 persons, unlike smaller-sized systems, these options are unlikely to be as effective as OCCT. The EPA also disagrees that CWSs should not have a threshold since NTNCWSs do not have a threshold. NTNCWSs are much more likely to control their entire system and the buildings they serve; therefore it is more likely that they can effectively implement the small system flexibilities

when serving populations greater than 3,300 persons.

Some commenters expressed concern about the possibility of point-of-use filters underperforming, potentially due to the unique water chemistry of each drinking water system. Other comments expressed skepticism that a filter program could be an adequate alternative to OCCT. The EPA disagrees with commenters expressing concern that the installation of point-of-use devices is not an effective alternative to OCCT at systems serving 3,300 persons or less. As explained above, because of the challenges that small systems face in implementing OCCT, point-of-use devices can be an effective alternative compliance technology for small systems. While the EPA recognizes that drinking water chemistry does vary by system, the final LCRI has device installation and maintenance requirements that water systems must follow to ensure that point-of-use devices are consistently working properly. For instance, the final LCRI requires that filters be independently certified by a third party to meet the ANSI standard applicable to the specific type of point-of-use unit to reduce lead in drinking water. This is to ensure that filters are of an adequate quality prior to installation. The LCRI also requires that the devices must be maintained in accordance with the manufacturer's recommendations to ensure the filter continues to be effective. This can include ensuring filter cartridges are changed as appropriate and resolving any operational issues. The devices must also include mechanical warnings to inform the user if the device is having operational problems. The final rule also includes regular testing requirements to ensure the filters' continued efficacy. Specifically, water systems must monitor one-third of all point-of-use devices every year, such that every three years all installed devices will have undergone monitoring (§ 141.93(c)(1)(iv)). The samples must be taken after water passes through the POU device to assess the device's performance. If any sample does exceed 0.010 mg/L, the water system must notify the persons served by the POU device and/or building management no later than one business day of receiving the tap sample results. The system must then document and complete corrective action within 30 days after the detected exceedance to ensure that filters are back to adequately performing. In addition, the LCRI requires systems that implement the point-of-use device option to provide instructions upon delivery of the device to help ensure consumers use the devices properly.

Commenters noted the challenge of notifying persons served by the POU device and/or building management no later than 24 hours after the results are received by the water system if the samples exceed the lead action level, as proposed in the LCRI for systems utilizing the point-of-use compliance option in § 141.93(c)(1)(iv). The EPA agrees that there are situations when the point-of-use monitoring results may be challenging to provide within 24 hours, such as if results are received over a weekend. Therefore, the EPA is revising the final LCRI to require water systems conducting point-of-use monitoring under § 141.93(c)(1)(iv) to provide notification to consumers within one business day of receiving a sample that exceeds 0.010 mg/L instead of 24 hours as proposed. The EPA also notes the point-of-use devices are required to include mechanical warnings to ensure consumers are notified of operational problems under § 141.93(c)(1)(iii). Therefore, consumers would know if their point-of-use device is not performing properly immediately, not just based on a sample result, and can contact the water system and take other appropriate steps to prevent exposure while the issue is addressed.

Commenters highlighted that some NTNCWS serve industrial facilities that may use potable water for non-consumptive uses (*i.e.,* cooling water). In these cases, commenters suggested that premise plumbing replacement that transports water not consumed by humans be exempt from replacement because the water would not be consumed by humans and therefore, allegedly, no humans would be exposed to lead from drinking water. The EPA recognizes that there may be a diverse range of water uses across NTNCWS, including for non-potable uses. The EPA provides two alternative compliance options: point-of-use filters or the replacement of lead-bearing plumbing. In this case, the NTNCWS could choose the option to install point-of-use filters at every tap that is used for cooking and/or drinking in non-residential buildings. A commenter suggested that NTNCWS should be exempt from LSLR if it installs point-of-use devices. The EPA disagrees with exempting NTNCWSs from LSLR. As noted in the LSLR section (section IV.B), LSLs, when present, are the most significant source of lead in drinking water, and it is essential that they be replaced as quickly as feasible. LSLR removes the source of lead exposure whereas point-of-use devices reduce exposures to lead.

The EPA also received comments supporting strengthened public education requirements to ensure people use point-of-use devices appropriately. The EPA agrees with commenters that support requiring public education to ensure proper use of point-of-use devices. In addition to requiring public education along with point-of-use devices that informs users how to properly use a point-of-use device, the EPA is adding a new requirement in § 141.93(c)(1)(v)(A) for the final LCRI that public education materials must also meet requirements of § 141.85(a)(1)(ii) through (iv) that includes information on health effects of lead, sources of lead, and steps the consumer can take to reduce their exposure to lead in drinking water.

3. Final Rule Requirements

The EPA is finalizing revisions in the LCRI to lower the eligibility threshold to CWSs serving 3,300 or fewer persons and all NTNCWSs, and removing LSLR as a compliance option. The EPA is adding a revision to § 141.93(c)(1)(iv) in the final LCRI for the water system to notify consumers, customers, and/or building management when a point-of-use sample exceeds 0.010 mg/L within one business day (rather than 24 hours). The final rule also finalizes the consolidation of the small system flexibility provisions in § 141.93 and removes cross-references to § 141.93 in other rule sections. In addition to requiring public education along with point-of-use devices that informs users how to properly use a point-of-use device, the EPA is adding a new requirement in § 141.93(c)(1)(v) for the final LCRI that public education materials must also meet requirements of § 141.85(a)(1)(ii) through (iv).

J. Public Education

1. Rationale and Feasibility of Public Education

Public education is one of the four components of the treatment technique rule the EPA promulgated in 1991, in addition to LSLR, CCT, and source water treatment (56 FR 26500, USEPA, 1991). As described in section III.D of this preamble, in establishing treatment technique requirements, the Administrator is required to identify those treatment techniques ''which, in the Administrator's judgment, would prevent known or anticipated adverse effects on the health of persons to the extent feasible.'' 42 U.S.C. 300g–1(b)(7)(A). ''Feasible'' is defined in section 1412(b)(4)(D) of SDWA as ''feasible with the use of the best technology, treatment techniques and

other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration).'' See section III.D.3 of this preamble for discussion of how the EPA considers feasibility.

Public education is effective for reducing lead exposure in drinking water. In the 1991 LCR, the agency explained that while actions such as CCT and LSLR will address a ''large portion of the lead problem in drinking water,'' there are ''situations where elevated lead levels will persist at consumers' taps during or even after these efforts. In these cases, it will be important for consumers to take actions in their homes (such as flushing tap water or replacing fixtures) to reduce their exposures to lead'' (56 FR 26500, USEPA, 1991). Public education was not intended to substitute for the other treatment techniques of the LCR, but rather to supplement and support them. Public education, particularly when combined with other actions and policies to reduce public health hazards, is an effective way to improve public health by influencing people's knowledge, beliefs, and behaviors. It may also promote service line replacement by encouraging property owners, including landlords of multi-family residences, to allow access for replacements. In developing the 1991 LCR, the EPA conducted pilot studies to evaluate the effectiveness of public education in reducing consumer exposure to lead in drinking water (56 FR 26500, USEPA, 1991). The agency found that ''well-designed and effectively implemented programs can change the knowledge and/or behavior of audiences and thereby reduce individual exposures'' (56 FR 26501, USEPA, 1991). The EPA concluded that public education is an ''effective method for reducing exposure to lead in drinking water by raising consumers' awareness of the problem and, consequently, modifying behavior that reduces their exposure'' (56 FR 26501, USEPA, 1991). By reducing exposure, public education thereby reduces the risk of experiencing adverse health effects. The literature continues to support the effectiveness of public education programs for risk reduction for a variety of contaminants (Harding and Anadu, 2000; Jordan et al., 2003; Greene et al., 2015; Brown et al., 2017; Lilje and Mosler, 2018; Neri et al., 2018).

It is feasible for PWSs to conduct public education. Since 1991, water systems have demonstrated that it is technically possible to conduct various lead public education activities, including both systemwide activities following an ALE (public education, consumer-requested sampling programs) and focused outreach to particular groups (*e.g.,* individual customers at sites sampled for lead, organizations that serve pregnant people, infants, and young children) as required by the original rule and subsequent revisions. The final LCRI requirements both rely on and build upon similar types of actions in the LCR, including notifying and conducting consumer-requested sampling to subsets of consumers (*e.g.,* people served by known or potential LSLs). Therefore, the EPA does not anticipate water systems will experience new technical challenges in conducting the LCRI public education requirements. Additionally, the EPA found in the 1991 LCR that public education is affordable for large systems (56 FR 26501, USEPA, 1991). The total national annualized costs for the LCRI public education requirements are estimated to range from $234.3 to $244.5 million in 2022 dollars, discounted at two percent (see the final LCRI Economic Analysis (USEPA, 2024a), chapter 4, section 4.3.6).

Public education, whether conducted after a lead action level exceedance or independent of a water system's lead levels, also prevents known or anticipated adverse health effects. The 1991 LCR required water systems to conduct public education after an ALE as ''a supplemental program either while the PWS is working to reduce lead levels through corrosion control, source water treatment, or LSLR, or after such actions fail to meet the lead action level'' (56 FR 26500, USEPA, 1991). In the LCRI, the EPA is retaining public education requirements following a lead action level exceedance. As discussed in the LCRI proposal, a systemwide lead action level exceedance triggers water systems to take action to reduce lead levels, such as installing or re-optimizing OCCT. While the tap sampling protocol was designed to assess CCT efficacy and not typical exposure (see section IV.E of this preamble), lead levels in individual tap samples could potentially represent water being consumed by individuals, given the potential for consumption of water that has been stagnant and in contact with leaded materials, especially in the mornings and upon returning home from work or school when the water has not been used for some time. Although the action level is not health-based (there is no safe level of lead; see section IV.F of this preamble) and the 90th percentile is not a good metric for determining individual health risks associated with lead exposure, an ALE indicates higher lead levels systemwide and potential corrosion issues, and therefore, public education can help consumers take steps to reduce their exposure to potentially higher lead levels at their tap. In addition, because actions such as OCCT and LSLR may take years to implement and systems may repeatedly exceed the lead action level during that time, the EPA is introducing additional requirements for water systems with recurring lead action level exceedances to further enhance public education on how consumers can reduce their exposure (see section IV.K of this preamble for discussion).

The EPA is also strengthening public education requirements unassociated with specific lead levels in the LCRI. On the one hand, the EPA understands that requiring additional systemwide public education in response to a level lower than the action level may reduce its efficacy. For example, in the 2000 Public Notification (PN) Rule, the EPA discussed limiting the number of instances of violations or situations that require Tier 1 PN to increase the effectiveness of those notices thereby leading to greater health protection (65 FR 25995, USEPA, 2000b). Similarly, the EPA noted that the use of urgent language in lower tiered notices could hinder the effectiveness of the more immediate notices (65 FR 25995, 26001, USEPA, 2000b). As introduced under the 2021 LCRR, a lead action level exceedance also requires Tier 1 public notification within 24 hours. The requirements in the LCRI are intended to ensure the effectiveness and impact of the public education requirements without overwhelming consumers with information.

On the other hand, the EPA recognizes that public education irrespective of the lead action level prevents known or anticipated adverse health effects. Drinking water can contain lead, sometimes at very high levels, and may cause adverse health effects whether or not there is a systemwide action level exceedance. Exposure to lead in drinking water can vary between individual homes, and sampling conducted to evaluate CCT performance may not reflect risks at every site. Therefore, public education only associated with action level exceedances is not sufficient. Consumers can take actions to reduce their individual exposure to lead in drinking water, especially at sites with significant sources of lead (*e.g.,* LSLs). Furthermore, public education directed at consumers with known or potential

LSLs supports the LSLR requirements by increasing consumer awareness and engagement. The EPA requires water systems to conduct public education independent of lead levels in a variety of contexts (*e.g.,* individual notices of tap sample results, notifications to people served by known or potential LSLs, lead information in the CCR, and public education and sampling in schools and child care facilities) because public education not associated with the action level can produce benefits by prompting consumers to take actions that reduce their exposure.

Therefore, the EPA is retaining systemwide public education requirements based on the lead action level and strengthening public education requirements unassociated with specific lead levels in the LCRI. These public education requirements are feasible and prevent known or anticipated adverse health effects to the extent feasible.

2. Proposed LCRI Revisions

The EPA proposed in the LCRI to retain the overall framework of the public education provisions in the 2021 LCRR with some revisions. The public education requirements under the 2021 LCRR include providing public education with consumers' individual lead tap sampling results; notification and public education for consumers served by a lead, GRR, or lead status unknown service line; public education to persons affected by a disturbance to a lead, GRR, or lead status unknown service line; and public education about the system's goal-based LSLR program when a system exceeds the lead trigger level. The 2021 LCRR also requires water systems to conduct public outreach activities if they exceed the trigger level and fail to meet their LSLR goal rate. Systems must also conduct several public education actions if they exceed the lead action level, including delivering public education materials to customers, public health agencies, and organizations that serve pregnant people and children, as well as other public education activities. In addition, all CWSs must conduct annual outreach to local and State health agencies about ''find-and-fix'' (renamed as Distribution System and Site Assessment in the LCRI). Small CWSs and NTNCWSs that select point-of-use devices as their compliance option in response to a lead action level exceedance must provide public education materials to inform users how to properly use point-of-use devices to maximize the units' effectiveness in reducing lead levels in drinking water. These public education provisions are required under § 141.85 of the 2021 LCRR. There are also public education related requirements in other parts of the 2021 LCRR, which are described further in other sections of this preamble. For example, § 141.92 requires lead sampling and public education in schools and child care facilities (see section IV.L of this preamble). In addition, § 141.84(d) and (e) of the 2021 LCRR include requirements for water systems to provide public education to consumers during partial and full LSLR. There are also requirements for a CCR, which must include information about lead and copper in drinking water under the CCR Rule (see section IV.O.1 of this preamble), and public notification for lead action level exceedances and violations to the LCR under the PN Rule (see section IV.O.2 of this preamble).

For the LCRI, the EPA proposed to retain the overall framework of the public education provisions in the 2021 LCRR with revisions to (1) increase the likelihood that the public education activities are effective in preventing adverse effects of lead on the health of persons to the extent feasible, and (2) conform to proposed changes to other aspects of the rule such as the removal of the lead trigger level. The EPA also proposed new public education requirements for copper. These proposed changes are described below.

a. Service Line Related Outreach

i. Required Public Education To Encourage Participation in Full Service Line Replacement

Because there is no trigger level in the LCRI, the EPA proposed to remove the 2021 LCRR's public education requirements related to service lines that apply as a result of a trigger level exceedance (§ 141.85(g) and (h) of the 2021 LCRR).

The EPA proposed in the LCRI to require outreach activities to encourage customer participation in LSLR for water systems that fail to meet the proposed LCRI's mandatory replacement rate (§ 141.85(h)). These water systems would be required to conduct outreach at least once in the year following the failure to meet the mandatory service line replacement rate and annually thereafter until the water system meets the replacement rate or until there are no lead, GRR, or unknown service lines remaining in the inventory, whichever occurs first. (See section V.H.2 of the proposed LCRI preamble (88 FR 84947, USEPA, 2023a) for a description of the proposed activities.)

Under the proposed LCRI, water systems with lead, GRR, or unknown service lines would also be required to provide information about the service line replacement program to consumers through other public education including materials provided after a lead action level exceedance and the notification of service line material; CWSs would also provide this information in the CCR (see section IV.O.1 of this preamble for information about CCR requirements).

Findings from a study on voluntary LSLR grant programs in Trenton, NJ suggest that programs are more effective at increasing customer participation in LSLR when they use extensive public outreach and education (*e.g.,* community meetings, door-to-door visits, mailings, and social media) (Klemick et al., 2024). As described in the proposed LCRI preamble, Chelsea, MA and Detroit, MI provide additional examples demonstrating how effective public education and community engagement can be to support service line replacement efforts (LSLR Collaborative, n.d.d; City of Detroit, 2023). The EPA's proposed requirement for additional outreach for systems that fail to meet the mandatory service line replacement rate similarly seeks to help water systems to engage their communities and raise awareness about risk from lead and GRR service lines and their replacement program to encourage greater participation in the service line replacement program. As described in the proposed LCRI preamble, many of the activities the EPA proposed in the LCRI are consistent with recommendations from AWWA and the LSLR Collaborative for outreach to encourage customer participation in LSLR (AWWA, 2022; LSLR Collaborative, n.d.e). Some of these activities are also responsive to feedback heard during the National Drinking Water Advisory Council (NDWAC) consultation for the proposed LCRI, in which NDWAC members described the importance of engaging with community members and community groups to provide public education (NDWAC, 2022, see section on ''Consultation on Proposed National Primary Drinking Water Regulation: Lead and Copper Rule Improvements'').

ii. Notification of Service Line Material

Under the LCRI, the EPA proposed revisions to the requirements for notification of a lead, GRR, or unknown service line (§ 141.85(e)). Specifically, the EPA proposed requiring the same notification content requirements for LSLs and GRR service lines since both increase the risk of exposure to lead. In the 2021 LCRR, only notices to households with LSLs are required to

include information about programs that provide financing solutions to assist property owners with replacement of their portion of the service line, and a statement that the water system is required to replace its portion of the service line when the property owner notifies the system that they are replacing their portion of it. The EPA proposed in the LCRI to require water systems to include this information in notices for households with either lead or GRR service lines. In addition, the EPA proposed to require water systems to include information in all notices (households with lead, GRR, and unknown service lines) on how to obtain a copy of the service line replacement plan, or view the plan on the internet if the system is required to make the plan available online, neither of which are required under the 2021 LCRR. The EPA proposed to require all notices to include steps consumers can take to reduce exposure to lead in drinking water that meet the requirements of § 141.85(a)(1)(iv), which contains proposed content updates, including information about using a filter certified to reduce lead. The EPA also proposed that the notices for persons served by a lead or GRR service line include instructions for consumers to notify the water system if they think the material categorization is incorrect (*e.g.,* if the service line is categorized as lead in the inventory but is actually non-lead). The EPA proposed that water systems follow up with consumers who notify the water system that they think the material is incorrect, verify the correct service line material, and update the inventory (see section IV.D of this preamble). In addition, to help ensure that consumers are aware of the EPA's proposed requirement in § 141.85(c) that water systems must offer to sample the tap of any consumer served by a lead, GRR, or unknown service lines who requests it (see section IV.J.2.c.i of this preamble), the EPA proposed that the notice of service line material include a statement about this requirement.

iii. Notification of a Service Line Disturbance

The EPA proposed revising the requirement for notification of a disturbance to a lead, GRR, or unknown service line (§ 141.85(g) of the proposed LCRI) to also include disturbances from actions such as physical actions or vibrations that could result in pipe scale dislodging and associated release of particulate lead. This is consistent with the type of disturbances that could be caused due to inventorying efforts, such as potholing, and conforms with the recommendations in the LCRR inventory guidance (USEPA, 2022c). The EPA also proposed revisions to clarify that reconnecting a service line to the water main is an example of an action that could cause a disturbance requiring notification and requested comment on whether to require distribution of filters for this type of disturbance. The EPA also proposed requiring the notification of a disturbance to be provided to both the customer and the persons at the service connection.

b. Individual Notification of Tap Sampling Results

i. Lead

The EPA proposed requiring consumer notification of an individual's lead tap sampling results within three calendar days of the water system receiving the results, regardless of whether the results exceed the lead action level (§ 141.85(d)). In contrast, the 2021 LCRR requires notification within three calendar days only for results that exceed 0.015 mg/L (the 2021 LCRR lead action level), while water systems have 30 days to notify consumers of results at or below 0.015 mg/L. The EPA proposed this change in response to stakeholder concerns about the lead action level being incorrectly interpreted as a health-based level. Because there is no safe level of lead in drinking water, setting delivery time frames based on how an individual sample compares to the lead action level is likely to contribute to this misinterpretation. The EPA's proposed delivery within three calendar days would allow all consumers whose taps were sampled for lead to be quickly notified of their results and informed of steps they can take to reduce exposure. Water systems would be required to deliver the notice either electronically (*e.g.,* email or text message), by phone, hand delivery, by mail (postmarked within three days of the system learning of the results), or by another method approved by the State. Water systems that choose to deliver the notice by phone would be required to follow up with a written notice hand delivered or postmarked within 30 days of the water system learning of the results; the EPA notes that while the proposed LCRI preamble correctly described the EPA's intent, the regulatory text of the proposed rule incorrectly referred to written follow-up being required after either phone or electronic delivery and incorrectly referred to the time frame for written follow-up as three days. As noted in the proposed LCRI preamble, written follow-up would allow greater information accessibility and would allow consumers to keep a copy of their results to use as a reference in the future, including the steps they can take to reduce exposure to lead in drinking water, and the other information provided in the notice. This written follow-up would also enable States to verify the content of the notice, which would be difficult to do if the notice were only delivered by phone.

ii. Copper

Under the LCRI, the EPA proposed to require water systems to provide consumer notice of an individual's copper tap sampling results (§ 141.85(d)). The proposed content requirements for this notice are described in section V.H.3 of the proposed LCRI (88 FR 84949, USEPA, 2023a), along with the EPA's rationale for introducing this new copper public education requirement. The EPA proposed the same three-calendar-day time frame and delivery methods for notification of copper tap sampling results as for lead. This allows for simplicity and administrative ease. In cases where copper samples are collected at the same time as lead, the EPA proposed to allow systems to combine the lead and copper results and required information into a single notice. This further simplifies implementation and reduces administrative burden.

c. Other Public Education Materials

i. Supplemental Monitoring and Notification

The EPA proposed to require systems to offer to sample the tap water for lead for any consumer served by a lead, GRR, or unknown service line that requests it (§ 141.85(c)). Since LSLs and GRR service lines increase the risk of exposure to lead in drinking water, the EPA believes this proposed requirement would encourage more people who are at greater risk of lead exposure to have their tap sampled to find out if there is lead in their drinking water and what actions they can take to reduce their risk of exposure. The EPA also proposed to require the system to notify consumers of the results of supplemental tap sampling so they are informed and can decide to take any needed steps to reduce their exposure to lead in their drinking water. Systems would be required to provide consumers with these results in the same three-day time frame required for results of compliance tap sampling in accordance with § 141.85(d).

ii. Public Education After a Lead Action Level Exceedance

Under the LCRI, the EPA proposed that water systems must conduct the public education activities under § 141.85(b)(2) for CWSs and § 141.85(b)(4) for NTNCWSs within 60 days of the end of the tap sampling period in which a lead action level exceedance occurred, even if an exceedance also occurred in the previous tap sampling period (*i.e.,* ''a consecutive action level exceedance''). This would ensure that consumers receive information following every lead action level exceedance, instead of waiting 12 months where two lead action level exceedances were consecutive.

The EPA also proposed to clarify that water systems must repeat the public education activities until the system is at or below the lead action level, and that the calculated 90th percentile level at or below the lead action level must be based on at least the minimum number of required samples under § 141.86 in order for the system to be able to discontinue public education.

The EPA proposed to allow a State that grants an extension for a water system to conduct the public education activities, to make the deadline no more than 180 days after the end of the tap sampling period in which the lead action level exceedance occurred. The EPA also proposed to restrict the extension such that it would only apply to the public education activities in § 141.85(b)(2)(ii) through (vi) (*i.e.,* delivery of public education materials to public health agencies and other organizations; submitting a press release; implementing additional activities like public meetings) and would not apply to delivery of public education materials to consumers under § 141.85(b)(2)(i).

Under the LCRI, the EPA proposed to require the public education materials be delivered to every service connection address served, in addition to the bill paying customer. The EPA proposed this change to better ensure that renters receive this important information so that they can decide to take any needed steps to reduce their exposure to lead in drinking water.

The EPA also proposed revisions to clarify that CWSs must deliver ''written'' public education materials to customers and service connections, rather than limiting the delivery to only printed materials. Similarly, the EPA proposed revisions to clarify that the required content of public education materials would not only apply to printed materials, but written materials more broadly. Written materials can include printed as well as digital materials delivered via email. The EPA proposed this update given the increasing use of electronic methods for accessing information and so that water systems can choose the most appropriate format for providing public education to the persons they serve.

The EPA proposed that States would only be allowed to approve changes to the content requirements of the public education materials if the State determines the changes are more protective of human health. The EPA proposed this revision to ensure that information provided in public education materials is most protective of human health and in recognition that some water systems may need to provide more tailored information to their community in order to provide greater public health protection (*e.g.,* systems with many lead, GRR, or lead status unknown service lines).

The EPA proposed to require the public education materials to include information about lead, GRR, and unknown service lines for systems that have lead, GRR, or unknown service lines. In addition to the required LSL information, the EPA proposed that systems must include information about replacing GRR service lines, identifying the material of unknown service lines, and accessing the service line replacement plan. Systems with known lead connectors or connectors of unknown material in their inventory would be required to include information in the public education materials about how consumers can access the inventory. The EPA also proposed to require that the public education materials include instructions for consumers to notify the water system if they think the service line material classification is incorrect. The EPA proposed to require all water systems, including NTNCWSs, to include information in the public education materials about lead in plumbing components and about how consumers can get their water tested, including information about the proposed provision of supplemental monitoring and notification in § 141.85(c).

The EPA also proposed requiring public education materials to include additional steps that consumers can take to reduce their exposure to lead in drinking water, including explaining that using a filter certified by an ANSI accredited certifier to reduce lead is effective in reducing lead levels in drinking water. (See section V.H.4 of the proposed LCRI (88 FR 84950, USEPA, 2023a) for additional revisions the EPA proposed to the public education content requirements.) The EPA's proposed revisions to the mandatory lead health effects language are described in section IV.J.2.d.i of this preamble.

iii. Public Education for Small System Compliance Flexibility Point-of-Use Devices

The EPA proposed moving the public education requirements for small water system compliance flexibility point-of-use devices from § 141.85 to § 141.93, so that the small system compliance flexibility provisions are all in the same rule section (see section IV.I of this preamble).

d. Requirements for Language Updates and Accessibility

i. Lead Health Effects Language

The EPA proposed to require the lead health effects language in public education materials to begin with a statement that there is no safe level of lead in drinking water. This was proposed to address concerns about water systems with detectable lead levels below the lead action level making statements that downplay or detract from the health effects language. The EPA reiterates that the lead action level is not a health-based level and there is no safe level of lead in drinking water. The agency previously established an MCLG for lead of zero.

The EPA also proposed revisions to the language to clarify that it identifies some and not all the health effects of lead, and to encourage consumers to consult their health care provider for more information about their risks. Health care providers are an important, trusted source of information about lead for consumers and are influential in encouraging consumers to take actions, particularly for those at highest risk from lead in drinking water (Jennings and Duncan, 2017; Griffin and Dunwoody, 2000). In addition to noting the risk to all age groups, the EPA proposed adding language to highlight the risks to pregnant people, infants (both formula-fed and breastfed), and young children. The EPA also proposed revisions to simplify the language so that it is easier for consumers to understand. The EPA proposed the following revised mandatory lead health effects language in the proposed LCRI:

> There is no safe level of lead in drinking water. Exposure to lead in drinking water can cause serious health effects in all age groups, especially pregnant people, infants (both formula-fed and breastfed), and young children. Some of the health effects to infants and children include decreases in IQ and attention span. Lead exposure can also result in new or worsened learning and behavior

problems. The children of persons who are exposed to lead before or during pregnancy may be at increased risk of these harmful health effects. Adults have increased risks of heart disease, high blood pressure, kidney or nervous system problems. Contact your health care provider for more information about your risks.

The same wording would be required for use in the health effects description in the public notifications for a lead action level exceedance and treatment technique violations as well as in the CCR.

ii. Translation Requirements

To ensure greater protection of consumers with limited English proficiency, the EPA proposed to require all the public education materials under 40 CFR 141.85 to include: (1) Information in the appropriate language(s) for the community the water system serves regarding the importance of the materials, and (2) contact information for persons served by the water system to obtain a translated copy of the materials or assistance in the appropriate language, or the materials must be translated into the appropriate language. This would be required for systems that serve a large proportion of consumers with limited English proficiency, as determined by the State.

3. Summary of Comments and the EPA's Response

a. Feasibility of Public Education Requirements

In the proposed LCRI, the EPA requested comment on the proposed determination that the public education treatment technique is feasible and prevents known or anticipated adverse health effects to the extent feasible. While some commenters agreed, others thought the proposed public education requirements did not go far enough to protect public health while still others thought they may overwhelm consumers and that the proposed time frames of some of the public education requirements (*e.g.,* consumer notices of tap sampling results) were not feasible for many water systems. In light of these comments, the final LCRI includes revisions that make public education more health protective without reducing its efficacy, for example, by clarifying the required text about the risks of lead in drinking water and requiring more frequent public messaging about those risks and steps consumers can take to protect their health (see section IV.J.3.f of this preamble). The agency is also adjusting the time frame for consumer notices of tap sampling results to three business days (instead of the proposed three calendar days) to be feasible for water systems, given the significant increase in notices required, while still ensuring that consumers receive information as quickly as feasible (see section IV.J.3.d of this preamble).

b. Streamlining Public Education Requirements

The EPA requested comment on additional ways to streamline public education and associated certification requirements. Commenters expressed concerns about the complexity of the public education and associated reporting requirements and the burden on water systems to conduct them. Some commenters suggested ways to simplify or streamline the public education and associated certification requirements by reducing the number of public education requirements or aligning due dates for public education reporting requirements. The EPA disagrees with reducing the number of public education requirements because they are necessary to inform consumers and prevent adverse health effects and the agency determined they are feasible (see section IV.J.1 of this preamble). However, the EPA agrees that streamlining public education reporting requirements would ease administrative burdens for both water systems and States. Thus, the EPA is combining deadlines for when water systems must report information about public education to the State (see section IV.N.1 of this preamble for the reporting requirements).

Some commenters suggested the EPA provide communication templates for water systems to assist them with conducting the public education requirements. The EPA agrees with this recommendation and intends to provide public education resources and templates to assist water systems and States.

Some commenters recommended requiring water systems to develop and submit a public education plan or communication strategy to the State to streamline regulatory reporting and State review and approval. Some commenters stated this would also help systems to have public education materials prepared ahead of time. While the EPA agrees that a public education plan could be helpful to water systems and encourages water systems to do so where appropriate, the agency is not introducing such a requirement at this time due to the additional administrative burden for water systems and States. In addition, the timing and need for certain public education can vary such as public education following a lead action level exceedance or multiple lead action level exceedances, and it may not make sense for systems and States to spend limited resources on public education plans that will not be implemented.

c. Service Line Related Outreach

i. Required Public Education To Encourage Participation in Full Service Line Replacement

In the proposed LCRI, the EPA requested comment on whether the types and timing of outreach activities proposed for systems failing to meet the mandatory service line replacement rate are appropriate and whether other activities should be considered. Some commenters supported the proposed activities; some recommended requiring systems to do more of these activities than proposed and to require that at least one activity involve face-to-face contact. Some commenters requested more information on the required outreach activities, such as the options of conducting a social media campaign and visiting targeted customers. Some commenters cautioned against the EPA being overly prescriptive on the types of required activities, recommending that systems have flexibility to tailor outreach and community partnerships to their community, similar to some comments received regarding the additional proposed activities for systems with multiple lead action level exceedances (see section IV.K.2 of this preamble).

The EPA encourages water systems to conduct additional public outreach; however, the agency disagrees with requiring systems to conduct a greater number of activities than proposed because requiring water systems to conduct at least one additional activity if they do not meet the LSLR rate is sufficient to encourage customer participation in the service line replacement program without detracting from water systems' efforts to meet the other public education requirements and requirements of the LCRI more broadly. The proposed LCRI includes several other public education requirements that provide consumers with information about lead, GRR, and unknown service lines described in section IV.J.2.a of this preamble. Therefore, the EPA is finalizing the number and types of activities as proposed.

The EPA agrees with commenters about the effectiveness of direct customer and consumer contact in community outreach. AWWA's 2022 Lead Communications Guide and Toolkit and the LSLR Collaborative describe direct customer and/or

consumer contact as particularly effective methods of communicating about LSLR (AWWA, 2022; LSLR Collaborative, n.d.e). That is why the LCRI includes several options for face-to-face activities, including conducting a public meeting, participating in a community event, and visiting targeted customers. However, the EPA also agrees with commenters that the requirements should not be overly prescriptive and that water systems should have flexibility to develop an activity that works best for their community. During the Small Business Advocacy Review for the proposed LCRI, the EPA also received feedback that face-to-face contact is particularly effective for engaging smaller communities, especially those with a higher percentage of older adults (USEPA, 2023j). However, this might not be the most appropriate option for a larger system, which might determine that a social media campaign and visiting targeted customers is more appropriate. Therefore, the LCRI offers a variety of activities for systems to choose from so that they can tailor the outreach to the community they serve.

While some commenters requested more information about what kind of social media campaign would meet the outreach requirement (*e.g.,* the number or frequency of social media posts, the types of social media networks), the EPA decided not to prescribe this level of detail as it will depend on the water system and community as well as the social media platform chosen to distribute information. A water system may consider collaborating with community partners and/or conducting a focus group with community members to determine what kind of social media campaign would be most effective for the community it serves.

Some commenters recommended removing the options to visit targeted customers or to send certified mail to all customers and consumers served by LSLs and GRR service lines, noting that these would be time intensive and expensive for water systems. Some commenters also noted that customers ignore certified mail rendering it ineffective. Given the benefits of face-to-face contact, the EPA disagrees with commenters who recommended removing visiting targeted customers as an option. Water systems for which this option is not feasible have many other options to choose from in the rule. The EPA also disagrees with recommendations to remove certified mail as an option; the purpose of certified mail as an option is to offer another opportunity for mailed public education about the replacement program and to ensure that the consumer receives it. Systems that find certified mail not to be an effective method of outreach in their communities can choose another option. The EPA is retaining these options because they are necessary to provide flexibility for system outreach that best meets the needs of their community.

Some commenters said the number of outreach activities required should depend on system size. The EPA proposed and maintained in the final LCRI requirements based on system size including that systems serving 3,300 or fewer persons must conduct at least one of any of the activities listed in § 141.85(h) while systems serving more than 3,300 persons must conduct at least one of the activities from § 141.85(h)(2)(i) through (iv) or at least two of the activities from § 141.85(h)(2)(v) through (viii).

Some commenters requested clarification on when systems can discontinue the outreach activities. The EPA notes that a water system can discontinue the activities once the system meets the required replacement rate or after there are no lead, GRR, or unknown service lines remaining in the inventory, whichever occurs first. For example, a water system that has only replaced 35 percent by Year 4 of the LSLR program would not meet the required rate and therefore would have to start conducting the additional outreach activities. The water system would have to be back on track with at least 50 percent replaced by the end of Year 5 to discontinue the activities.

Some commenters expressed concerns with the proposed requirement for additional outreach being imposed as a penalty for systems that fail to meet the replacement rate. The EPA clarifies that the purpose of the additional outreach is to help water systems achieve greater customer participation in their LSLR programs so that they can get back on track towards replacing all LSLs in 10 years. LSLR programs that incorporate extensive community outreach have demonstrated how effective public education can be in increasing LSLR participation (Klemick et al., 2024; City of Detroit, 2023; LSLR Collaborative, n.d.d). To clarify this intention in the final rule, the EPA is calling this requirement ''Outreach activities to encourage participation in full service line replacement'' rather than the proposed ''Outreach activities for failure to meet the lead service line replacement rate.''

ii. Notification of Service Line Material

The EPA requested comment on whether to require additional public education requirements to encourage service line replacement faster than the 10-year replacement deadline. Some commenters recommended maintaining the notification of a lead, GRR, or unknown service line requirement as annual, while some commenters recommended increasing the frequency to every six months. In contrast, some commenters questioned whether increased frequency of this notification would have an impact on public health. In the final rule, the EPA is maintaining the notification as annual. Between this annual notification and other requirements for water systems to provide information about the publicly available service line inventory and service line replacement plan (*e.g.,* CCR, public education after a lead action level exceedance) and the requirement for systems to offer to sample the tap for lead for any consumer served by a lead, GRR, or unknown service line who requests it, the EPA believes these public education requirements will encourage swift service line replacement without overburdening water systems and detracting from their efforts to identify and replace LSLs.

The EPA also requested comment on whether the agency should require systems to annually notify consumers if they are served by a lead connector, similar to the required notifications for sites with lead, GRR, or lead status unknown service lines. Some commenters recommended requiring notification of a lead connector. Some commenters said if lead connectors are required in the service line inventory, notifying the consumer should also be required. However, some commenters said if lead connectors are not actively required to be replaced, then systems should not be required to notify consumers of their presence. In the final rule, the EPA is not requiring annual notification of lead connectors to individuals served by lead connectors. For the final LCRI, the EPA is requiring water systems to include identified connectors in their service line inventory (see section IV.D.1 of this preamble). Consumers have access to the publicly available service line inventories to determine if they are served by a lead connector. Information about how to access the service line inventory is required in notifications of a service line that is known to or may potentially contain lead, public education materials provided after a lead ALE (see section IV.J.4.c of this preamble), and the widely distributed CCR (see section IV.O.1 of this preamble). The EPA is also maintaining the requirement for water systems to

replace lead connectors as encountered (see section IV.B of this preamble). Given the differences in how service lines and connectors are required to be identified and replaced and their associated risks of lead exposure, the EPA determined that it is sufficient to require water systems to provide consumers with information on how they can access the inventory to find out if they are served by a lead connector rather than requiring an annual notification of connector material. The EPA is requiring notifications for persons served by a lead, GRR, or lead status unknown service line to raise awareness to consumers that they are consuming drinking water served by a service line that may contribute lead to drinking water, educate them about identification and replacement (therefore likely increasing replacement participation), and steps they can take to reduce exposure to lead in drinking water. The EPA is not requiring water systems to identify all lead connectors in their distribution system, unless they can be identified through available information, and is requiring water systems to replace lead connectors when encountered. This is because lead connectors are expected to contribute less to exposures from lead in drinking water when compared to LSLs because they are shorter in length and to enable water systems to prioritize funding and staffing resources towards replacement of lead and GRR service lines and identifying unknown service lines. Providing direct notification to consumers with lead connector materials would provide limited information in terms of location (for those with unknown connectors) and replacement opportunities.

iii. Notification of a Service Line Disturbance

The EPA received comments on the requirement for notification of a disturbance to a lead, GRR, or unknown service line. The EPA proposed in the LCRI to require notification, including providing public education materials and flushing instructions, to customers and persons served by the water system that are served by a lead, GRR, or unknown service line following actions taken by a water system that cause a disturbance to the service line. The EPA proposed that this includes actions that result in a shut off or bypass of water to an individual or group of service lines such as operating a valve on a service line or meter setter, or reconnecting a service line to the main. The EPA proposed that water systems must provide filters when the disturbance results from the replacement of an inline water meter, water meter setter, or connector, and requested comment on whether to require provision of filters for disturbances resulting from replacement of a water main, in addition to the proposed requirement for public education materials and flushing instructions. Some commenters expressed support for providing filters for disturbances caused by water main replacement, noting that lead releases from these disturbances are unpredictable and flushing would not suffice. Other commenters were opposed to any notification requirement for disturbances caused by water main replacement, expressing concerns that water systems would have to provide notification on multiple occasions since water main replacement can be a multi-day process.

The EPA is requiring that when the water main replacement results in a service line being physically cut, water systems must provide persons served at that service connection with a pitcher filter or point-of-use device certified by an ANSI accredited certifier to reduce lead, instructions to use the filter, and six months of filter replacement cartridges, in addition to the proposed public education materials and flushing instructions. Water systems would provide the filters to consumers at the same time as the public education materials and flushing instructions so such a requirement would not require any additional outreach effort. In the final rule, the EPA is requiring provision of filters for disturbances to a lead, GRR, or unknown service line caused by replacement of an inline water meter, water meter setter, connector, or water main to increase public health protection since all these replacements involve cutting pipe, which can cause lead releases in the water when LSLs or GRR service lines are present (Lewis et al., 2017; Camara et al., 2013; Del Toral et al., 2013).

Some commenters supported the proposed revision to add significant disturbances caused by inventorying efforts to the types of disturbances that would require notification. However, other commenters perceived this designation as being too open-ended, stating that compliance would be infeasible and that there is not a technical basis for this proposed requirement. For these reasons, they recommended removing the proposed regulatory text ''or other actions that cause a disturbance to a service line or group of service lines, such as undergoing physical action or vibration that could result in pipe scale dislodging and associated release of particulate lead.'' The EPA is maintaining the proposed requirement in the final rule. First, the EPA disagrees with the claim that there is no technical basis for this requirement. Field methods used for inventory efforts can disturb a service line or group of service lines such that lead is released and puts consumers at risk of exposure to lead in drinking water (Hensley et al., 2021). The regulatory text specifies actions that result in ''pipe scale dislodging and associated release of particulate lead'' that would put consumers at increased risk of lead exposure and therefore necessitate notifying consumers so they can decide to take precautions to prevent adverse health effects. It is for these same technical reasons that the EPA included recommendations in the agency's LCRR inventory guidance to notify consumers about the potential for temporarily elevated lead levels and provide them with information about reducing lead levels following an LSL or GRR disturbance during excavation (USEPA, 2022c). Second, the EPA believes it is feasible for water systems to notify consumers when there is a disturbance to a service line or group of service lines that could result in pipe scale dislodging and associated release of particulate lead and disagrees that this type of disturbance is too broad for water systems to comply with the requirement. However, the EPA is making the following small correction to the punctuation in the final regulatory text ''or other actions that cause a disturbance to a service line or group of service lines, such as undergoing physical action or vibration, that could result in pipe scale dislodging and associated release of particulate lead'' to clarify that the agency is specifically referring to disturbances resulting in pipe scale dislodging and associated release of particulate lead whereas the proposed regulatory text could have been interpreted as any disturbances to a service line or group of service lines.

Some commenters expressed concerns about the feasibility of notifying a customer before returning the line to service or within 24 hours if the customer does not reside at the service connection (*e.g.,* a customer who is a property owner and renting their property). The EPA agrees with these concerns, and in the final rule, the agency is allowing water systems up to 30 days after the disturbance to notify customers who are not at the service connection (*i.e.,* non-resident property owner) since they would not likely be consuming the water and therefore would not likely be exposed to the potentially elevated lead levels caused

by the disturbance. Although a non-resident customer may not be at risk of exposure (such as a rental property owner), it is appropriate to notify the customer if infrastructure work is conducted on their property. In addition, there may be situations where the non-resident customer could consume drinking water at their property. Water systems must still notify persons at the service connection of the disturbance before the service line is returned to service or within 24 hours of the disturbance if service was not shut off or bypassed.

d. Individual Notification of Tap Sampling Results

In the proposed LCRI, the EPA requested data, analyses, and comments on the proposed determination that water systems are capable of providing consumer notices of individual tap sampling results within three calendar days of learning of those results, regardless of whether the results exceed the lead or copper action level, or if a longer time frame is needed (*e.g.,* three business days, seven calendar days, 14 calendar days). Many commenters expressed concerns with the feasibility of the proposed three calendar-day time frame, particularly if a system receives results before a weekend or holiday, and recommended the EPA extend the deadline for systems to deliver consumer notice of lead and copper tap sampling results, including on-request. Suggested time frames included three business days, five business days (or seven calendar days), 10 days, 14 days, or 30 days for all results. Some commenters recommended allowing more time for results that do not exceed the action level or the practical quantitation limit. On the other hand, some commenters recommended maintaining the proposed three calendar days for notification of all results or shortening the time frame to 24 hours.

The EPA disagrees with including different timeframes based on lead levels found as there is no safe level in drinking water and consumers should be made aware of any lead in their individual tap sample results as soon as possible. There is no safe level of lead in drinking water and while the tap sampling protocol is designed to inform assessment of CCT, as discussed above an individual tap could potentially represent water being consumed by individuals and therefore individual results are useful to provide to the consumer. Recognizing implementation concerns, the EPA determined having a single time frame for delivery of notifications simplifies implementation and reporting. In addition, providing all tap sample results in the same, timely manner is important to build trust with consumers who often must be willing to participate in the sampling. After considering public comments and the increased number of consumer notifications of tap sampling results required under the LCRI, the EPA has determined that it may not be feasible for water systems to provide consumer notification within three calendar days. Therefore, the final rule requires water systems to provide consumer notice of lead or copper tap sampling results as soon as practicable but no later than three business days of the system learning of the results. Three business days rather than three calendar days alleviates concerns raised about notification requirements on weekends and holidays, recognizing water systems may not have staff available to conduct notification. This is the same time frame regardless of lead or copper levels and includes both tap sampling results from lead and copper tap water monitoring carried out under the requirements of § 141.86 as well as consumer-requested tap sampling results from supplemental tap water monitoring carried out under the requirements of § 141.85(c). The EPA notes that there are many approved delivery methods for this notification, including electronic delivery (*e.g.,* email, text message, notification in water system portal) so that water systems can choose the most suitable option for the persons they serve and so that they are able to meet the three business day time frame.

Some commenters noted a discrepancy between the preamble and regulatory text with regards to the proposed written follow-up that would be required for systems that deliver the notice orally by phone. The preamble to the proposed rule correctly stated that written follow-up would be required for notices delivered by phone within 30 days of the system learning of the results. The regulatory text incorrectly referred to this written follow-up as being required for notices delivered by phone or electronically, and also incorrectly stated that it would be required within three days of the system learning of the results. The EPA corrected this in the final rule which requires written follow-up only for notices delivered by phone call or voice message since this would be an oral communication and consumers need access to a written copy of the results and other information such as steps to reduce their risk of exposure to lead in drinking water. The purpose of allowing water systems to deliver the notification by a voice phone call is to make it easier for systems to notify consumers of their tap sampling results as quickly as possible within three business days, since some systems may not be able to deliver the notice using other methods such as mail within this time frame or other methods such as electronic delivery may not be appropriate for their community. The final rule requires this written follow-up within 30 days, and not three days, as the latter would defeat the purpose of the phone delivery option and would be redundant with a system simply delivering the written notice within three business days, which is already an option.

Some commenters requested clarification on when the delivery time frame begins, and specifically when a water system is considered to have ''learned of'' the results. This can vary for water systems depending on how the water system learns of the results. Some systems have their own labs where they know the results as soon as their labs analyze the samples. Other systems send their results to private labs, and the systems would learn of the results potentially by mail, fax, email, or other means. The EPA is not prescribing how systems must learn of the results. In any case, once the system learns of the results, it then has up to three business days to deliver the consumer notice. Some commenters requested clarification on the time frame for copper tap sampling results and on-request sampling results. The EPA notes that the same notification time frame applies to all lead and copper sampling results. In cases where copper samples are collected at the same time as lead, systems can combine the lead and copper results and required information into a single notice. The EPA expects that this would simplify implementation by allowing systems to deliver both the lead and copper results and associated required information at the same time.

Some commenters appeared to conflate the notice of individual tap sampling results with the Tier 1 public notification that is required within 24 hours of a systemwide lead action level exceedance (based on the 90th percentile calculation). The EPA notes that this requirement concerns tap sampling results from an individual site and is different from the 90th percentile calculation of a system's lead levels, which requires 24-hour public notification (see section IV.O.2 of this preamble), and public education within 60 days when there is a systemwide lead action level exceedance (see section IV.J.4.c.ii of this preamble).

e. Supplemental Monitoring and Notification

In the proposed LCRI, the EPA requested comment on whether the proposed requirement for water systems to offer lead sampling to consumers with lead, GRR, or unknown service lines in the notice of service line material is effective at reducing adverse health effects. The EPA also requested comment on the proposed requirement for water systems to deliver consumer-initiated test results within three calendar days of obtaining those results. Some commenters agreed that offering lead sampling is effective at reducing adverse health effects. However, some commenters expressed concerns with the burden on water systems relative to the level of risk reduction the proposed requirement could achieve. Some noted that it would be difficult for water systems to budget for an uncertain amount of sampling and recommended a cap on the number of samples that the water system would have to pay for or a cap on water system spending on consumer-requested sampling. Some commenters recommended only offering sampling to persons served by LSLs and GRR service lines, but not unknowns. Some commenters requested clarification on what exactly it means for a water system to ''offer'' sampling and whether the water system would be required to pay for analyzing the sample. Some commenters stated that the rule should specify that this sampling be done at no charge to the individual consumer. The EPA also requested comment on the proposed requirement for water systems to deliver consumer-initiated test results within three calendar days of obtaining those results. Some commenters supported the three-day time frame proposed for delivery of consumer-requested sampling results, while others expressed concerns noting that it would disincentivize systems from offering free lead testing to consumers.

The EPA agrees with commenters that offering lead tap sampling to consumers with lead, GRR, or unknown service lines is effective at reducing adverse health effects and disagrees with commenters that it has limited risk reduction relative to the burden on water systems. As stated in the proposal, lead and GRR service lines can increase the risk of exposure to lead in drinking water (88 FR 84878, 84950, USEPA, 2023a). This requirement will encourage more people who are at greater risk of lead exposure to have their tap sampled to find out if there is lead in their drinking water and what actions they can take to reduce their risk of exposure, thereby reducing adverse health effects. The EPA disagrees with withholding the offer for lead sampling from consumers served by unknown service lines as they may also potentially contain lead which increases the risk of exposure for these consumers. The EPA does not agree that this requirement has limited risk reduction relative to the burden on water systems. This requirement could be implemented similarly to other lead tap sampling regularly conducted by the water system such as providing consumers with sampling materials and instructions, collecting tap samples, analyzing samples in-house or commercially, and informing consumers of the results. The rule also provides that consumer-requested sampling does not have to conform to compliance sampling requirements to provide flexibility and meet the needs of consumer requests; however, at sites served by a lead, GRR, or lead status unknown service line the samples must capture both water in contact with premise plumbing and water in contact with the service line. With regards to who bears the cost of consumer-requested sampling, as described in the LCRI proposal, the requirement to offer sampling does not address how a water system would cover the cost of the sampling. The EPA does not direct how a water system covers the costs of compliance with a NPDWR as this is, at its core, a matter of State and local law. State and local governments regulate how water systems allocate costs for services provided to their customers. Therefore, the final rule does not include any specifications as to the entity responsible for the cost of consumer-requested sampling. (See section IV.J.4.b of this preamble about the time frame for delivery of lead tap sampling results).

f. Public Education After a Lead Action Level Exceedance

In the proposed LCRI, the EPA requested comment and supporting data on the capacity of water systems to conduct some or all of the required public education activities in 30 days, or another period of time that is less than 60 days, after the end of the tap sampling period in which a systemwide lead ALE occurs. Most commenters recommended maintaining the time frame as 60 days after the end of the tap sampling period in which the lead ALE occurred, stating that a shorter time frame of 30 days would be difficult or would not be feasible for many systems. However, some commenters stated it would be feasible to conduct the public education requirements within 30 days. Some commenters recommended that the EPA consider increasing the time frame to 90 days. Some commenters recommended requiring different time frames based on the size of the system and also different time frames for the different public education activities required after a lead ALE (*e.g.,* different time frames for delivery of public education materials to consumers and organizations, submitting a press release, etc.).

The EPA is maintaining the 60-day time frame for conducting public education after a lead ALE. The EPA believes that systems need the 60 days after the end of the tap sampling period to develop and/or update public education materials, consult with the State, identify the organizations that they need to share these materials with, plan activities (*e.g.,* public meetings, public service announcements) in consultation with the State, and submit a press release, among other public education tasks required under § 141.85(b)(2) for CWSs and § 141.85(b)(4) for NTNCWSs. Given the increase in lead ALEs that may occur as a result of the reduced lead action level and revised tap sampling protocol, water systems will likely have more ALEs leading to the need to conduct more public education, in addition to the 24-hour Tier 1 public notification of a lead ALE. For this reason, the EPA disagrees with shortening the deadline for conducting public education. In addition, since the PN Rule requires all water systems to conduct public notification within 24 hours of the system learning of a lead ALE, consumers will have already received information about the situation, potential adverse health effects, and actions they should take. The EPA disagrees with increasing the time frame to 90 days as water systems have demonstrated for decades their ability to conduct the public education requirements within 60 days, and the rule already allows water systems to apply to States for an extension if they are unable to meet this time frame. The extension would only apply to the activities in § 141.85(b)(2)(ii) through (vi) for CWSs (or § 141.85(b)(4)(i) and (ii) for NTNCWSs) and would not apply to delivery of public education materials directly to consumers under § 141.85(b)(2)(i) because, as demonstrated by the many years this requirement has been in place, it is feasible for systems to distribute public education materials to consumers within 60 days. The EPA disagrees with requiring different time frames for conducting the public education

requirements based on system size as the rule already includes fewer public education requirements for systems exceeding the lead action level that serve 3,300 or fewer persons (see § 141.85(b)(9) of the LCRI).

The EPA received many comments on the content of public education materials, including both public education materials after a lead ALE as well as other public education materials that require some of the same content. Some commenters expressed concerns about water systems including incorrect or misleading information in public education materials about the safety of their drinking water. The EPA notes that the rule specifies that if water systems include additional information in public education materials beyond what the EPA has required, this additional information must be consistent with the required information. Any changes made to required information must be approved by the State as more protective of human health. In addition, water systems are required, and have been required since 2007, to provide States with a copy of all public education materials required under § 141.85 prior to delivery, in accordance with § 141.85(a)(1). This means that States should be aware of any incorrect or misleading statements that systems include in public education materials and have a chance to intervene to ensure the information is corrected prior to delivery to consumers. Additionally, the State may require the system to submit for review and approval the content of the materials prior to delivery. This is specified under § 141.85(a)(1) of the rule; however, there is not a corresponding reporting requirement in § 141.90(f), which may lead systems and States to overlook this requirement. To ensure systems and States are aware of this existing requirement and thereby encourage stronger rule implementation, in the final LCRI the EPA has added a reporting requirement to § 141.90(f) that reiterates this same requirement for systems to submit copies of public education materials to the State prior to delivery. This State oversight should be adequate to help ensure that public education materials do not include inaccurate information about lead in drinking water and thereby provide for greater public health protection. The EPA also believes that the proposed revisions made to the lead health effects language that the EPA is finalizing, including requiring an explicit statement that there is no safe level of lead in drinking water, will help ensure that consumers have a more accurate understanding of the risks of lead in their drinking water.

Some commenters recommended adding language to public education materials about the risk of lead exposure even when tap results at a given point in time do not detect lead. The EPA also heard these concerns from some NDWAC members in the NDWAC Public Meeting on the final LCRI (NDWAC, 2024). In response to commenters' concerns, the EPA has updated the content requirements for public education materials in § 141.85(a)(1)(iii)(B) to require water systems to explain that lead levels may vary and therefore lead exposure is possible even when tap sampling results do not detect lead at one point in time, in addition to the requirements to provide information on the sources of lead in drinking water. This information would apply to any public education materials that are required to meet the content requirements of § 141.85(a)(1)(iii)(B), which include the consumer notice of lead tap sampling results, public education distributed after a systemwide lead action level exceedance, and public education distributed by systems that do not meet the mandatory LSLR rate. The EPA is also requiring the CCR to include similar information in its informational statement about lead. The EPA believes that this added information will also help to ensure that consumers have a more accurate understanding of the risks of lead in their drinking water so they can decide whether to take additional protective measures and which ones are appropriate for their situation (*e.g.,* remove lead plumbing, remove LSL, use a filter certified to reduce lead).

The proposed LCRI would have required CWSs to deliver public education and DSSA information to local and State health agencies by mail or another method approved by the State, similar to the 2021 LCRR (see § 141.85(i)). Some commenters recommended that water systems be allowed to deliver these materials by email, noting that email would make it easier to reach the appropriate person and attach data. The EPA agrees with commenters that email delivery of this information would facilitate data sharing and therefore the agency has added email as an allowed delivery method in the final rule.

g. Translation of Public Education Materials

The EPA proposed to require all public education materials under § 141.85 to include (1) information in the appropriate language(s) regarding the importance of the materials, and (2) contact information for persons served by the water system to obtain a translated copy of the materials, request assistance in the appropriate language, or the materials must be translated into the appropriate language.

Many commenters supported the proposed translation requirements to help overcome language barriers and make public education materials about lead in drinking water more accessible and understandable to a wider community, noting that they would support greater environmental justice. Some commenters requested clarification on the meaning of a ''large proportion'' of consumers with limited English proficiency. The rule specifies that this proportion is determined by the State; moreover, this phrase has been a part of the LCR since 2007 (72 FR 57782, USEPA, 2007a) and the same phrase has been used in the CCR Rule (§ 141.153(h)) and PN Rule (§ 141.205(c)(2)) translation requirements after which this provision was originally modeled. Some commenters requested clarification on what constitutes ''limited English proficiency.'' As stated in the proposed LCRI preamble, individuals with limited English proficiency include those who do not speak English as their primary language and who have a limited ability to read, write, speak, or understand English.

In the proposed LCRI, the EPA requested information and data on when a system provides translated materials to consumers with limited English proficiency, what resources are used to translate materials (*e.g.,* State resources, community organizations), and what barriers water systems may face in providing accurate translated materials. The EPA also requested comment on whether the agency should require States, as a condition of primacy, to provide translation support to water systems that are unable to do so for public education materials to consumers with limited English proficiency.

Some commenters supported requiring States to provide translation assistance to systems, while others were opposed and expressed concerns about cost and expertise for many States. Some commenters noted States have had difficulty with acquiring translation services for public notices and also expressed concern with the accuracy of translation services that water systems obtain on their own. Some commenters said it would be infeasible for States to provide translated public education materials to consumers without additional EPA assistance. The EPA received many comments requesting

that the agency provide translation resources and translated templates to assist water systems and States. The EPA intends to provide templates of public education materials that provide greater accessibility to consumers, including in multiple languages to assist water systems. In response to commenters' concerns about States' capacity to provide translation support, the EPA is requiring that States provide technical assistance to systems in communities with a large proportion of consumers with limited English proficiency, as a condition of primacy for the LCRI. This is consistent with the EPA's Final CCR Rule Revisions, which include a similar requirement (89 FR 45980, USEPA, 2024c). The EPA believes that it should be feasible for States to provide technical assistance to water systems. Depending on the State's capacity, this could be as simple as providing resources for water systems to translate their public education materials, including EPA-provided translations of required content for public education materials (*e.g.,* health effects language, definitions) and translated templates of public education materials through a website. This can also include providing water systems with information on how consumers can contact the State for translation assistance upon request.

4. Final Rule Requirements

a. Service Line Related Outreach

i. Required Public Education To Encourage Participation in Full Service Line Replacement

In the final LCRI, the EPA is requiring, as proposed with minor revisions, outreach activities to encourage customer participation in full service line replacement for CWSs that do not meet the mandatory service line replacement rate calculated across a cumulative period as required under § 141.84(d)(5). For the final LCRI, the EPA is revising the proposed requirement to account for the change from a rolling three year period to a cumulative period (see section IV.B of this preamble). These water systems must conduct the outreach at least once in the year following the calendar year for which the system does not meet their cumulative average replacement rate and annually thereafter until the water system meets the replacement rate or until there are no lead, GRR, or unknown service lines remaining in the inventory, whichever occurs first. The EPA is also revising the proposed requirement to specify that it only applies to CWSs, whereas the proposed requirement would have applied to all water systems that do not meet the service line replacement rate. In the final rule, CWSs serving more than 3,300 persons must conduct at least one of the following activities to discuss their service line replacement program and opportunities for replacement and to distribute public education materials:

- Conduct a public meeting;
- Participate in a community event to provide information about its service line replacement program;
- Contact customers by phone call or voice message, text message, email, or door hanger; or
- Use another method approved by the State to discuss the service line replacement program and opportunities for replacement.

Alternatively, CWSs serving more than 3,300 persons must conduct at least two of the following activities:

- Send certified mail to customers and persons served by LSLs or GRR service lines to inform them about the water system's service line replacement program and opportunities for replacement;
- Conduct a social media campaign;
- Conduct outreach via the media including newspaper, television, or radio; or
- Visit targeted customers (*e.g.,* customers in areas with lower service line replacement participation rates) to discuss the service line replacement program and opportunities for replacement.

CWSs serving 3,300 persons or fewer must conduct at least one activity from either set of options. The final rule excludes NTNCWSs from this requirement as a NTNCWS would likely own its entire system and therefore would not likely have consumers to engage with. In the proposed rule, one of the activities included conducting a townhall meeting; the final rule revised this to be a public meeting more generally since a townhall meeting may imply government involvement. The option to send certified mail to customers and persons served by lead or GRR service lines to inform them about the water system's service line replacement program and opportunities for replacement is separate from, and cannot be substituted by, the notification of service line material required under § 141.85(e).

ii. Notification of Service Line Material

In the LCRI, the EPA is finalizing the clarifications to the requirement for water systems with lead, GRR, or unknown service lines in their inventory to notify customers and consumers if they are served by one of these service lines, as proposed. The EPA is requiring the same notification content requirements for lead and GRR service lines since both increase the risk of exposure to lead. In addition, all notices (lead, GRR, and unknown service lines) are required to include information about accessing the service line replacement plan and steps consumers can take to reduce exposure to lead in drinking water. These notices must meet the requirements of § 141.85(a)(1)(iv) which contains finalized revisions to update content requirements, including information about using a filter certified to reduce lead. The public education materials for lead and GRR service lines must include instructions for consumers to notify the water system if they think the material categorization is incorrect (*e.g.,* if the service line is categorized as lead in the inventory but is actually non-lead). Water systems must follow up with consumers that notify the water system that they think the material is incorrect, verify the correct service line material, and update the inventory as appropriate (see section IV.D of this preamble). In addition, the notice must include a statement that water systems must offer to sample the tap water of any consumer served by a lead, GRR, or unknown service line who requests it in accordance with § 141.85(c).

iii. Notification of a Service Line Disturbance

Notification of service line disturbance is required following actions taken by a water system that cause a disturbance (§ 141.85(g) of the proposed LCRI but updated to § 141.85(f) in the final LCRI). This includes actions that result in a shut off or bypass of water to an individual service line or a group of service lines (*e.g.,* operating a valve on a service line or meter setter, or reconnecting a service line to the main). This can also include other actions that cause a disturbance to a service line or group of service lines, such as undergoing physical action or vibration, that could result in pipe scale dislodging and associated release of particulate lead (*e.g.,* disturbances following inventorying efforts). For these disturbances, water systems are required to provide persons at the service connection with public education materials and instructions for a flushing procedure to remove particulate lead.

For some disturbances, water systems are required to provide persons at the service connection with public education materials and pitcher filters or point-of-use devices certified by an ANSI accredited certifier to reduce lead, along with filter instructions and filter

replacement cartridges. This is the case when the disturbance results from the replacement of an inline water meter, water meter setter, or connector. Under the final rule, the EPA has added a requirement that water systems must also provide filters when the disturbance results from the replacement of a water main whereby the service line pipe is physically cut (§ 141.85(f)(2)). The EPA is requiring distribution of filters in these situations because disturbances that involve physically cutting a service line that is known to or may potentially contain lead are particularly at risk of causing elevated lead levels in the drinking water (Lewis et al., 2017; Camara et al., 2013; Del Toral et al., 2013). In the final rule, the EPA is also requiring that water systems provide instructions for a flushing procedure to remove particulate lead for these disturbances so that persons at the service connection are provided this additional information for reducing lead in drinking water.

In the final rule, the public education materials provided after a disturbance must meet the content requirements in § 141.85(a)(1)(ii) through (iv), which describe health effects of lead and steps consumers can take to reduce their exposure, as proposed. The EPA is also requiring the public education materials to include the information on lead, GRR, and unknown service lines specified in § 141.85(a)(1)(vi) so that customers and persons at the service connection receive information about opportunities for replacing lead and GRR service lines and identifying the material of unknown service lines.

Water systems that cause a disturbance to a lead, GRR, or unknown service line are required to notify persons both at the service connection and customers. Water systems must notify persons at the service connection of the disturbance before the service line is returned to service or within 24 hours of the disturbance if service was not shut off or bypassed. In the final rule, the EPA is providing water systems up to 30 days after the disturbance to notify customers who do not reside at the service connection (*e.g.,* a customer who is a property owner and renting their property) since they would not be consuming the water and therefore would not be exposed to the potentially elevated lead levels caused by the disturbance but should still be notified since the disturbance affects their property.

b. Individual Notification of Tap Sampling Results

i. Lead

The EPA is finalizing the requirement for water systems to provide notification to consumers of their individual lead tap sampling results within three business days of learning of the results. The EPA revised the proposed requirement from three calendar days to three business days for the final rule. This includes notification of results from compliance tap sampling as well as consumer-requested sampling in accordance with § 141.85(d) and (c), respectively. The same time frame applies to all lead levels, regardless of whether an individual sample's lead levels exceed 0.010 mg/L (the lead action level). Water systems can deliver the notice either electronically (*e.g.,* email or text message), by phone call or voice message, hand delivery, by mail (postmarked within three business days of the system learning of the results), or by another method approved by the State. Water systems that choose to deliver the notice orally by phone would be required to follow up with a written notice hand delivered or postmarked within 30 days of the water system learning of the results. In addition to including the proposed content requirements, the final rule also requires the notice of lead tap sampling results to include information about possible sources of lead in drinking water that meets the requirements of § 141.85(a)(1)(iii)(B), which includes explaining that lead exposure from drinking water is still possible even if tap sampling results do not detect lead at one point in time. This is in addition to the other information that the EPA is requiring in the final LCRI, including the mandatory lead health effects language provided in § 141.85(a)(1)(ii) and steps consumers can take to reduce their risk of exposure provided in § 141.85(a)(1)(iv), among other information.

ii. Copper

Water systems must also provide notification to consumers of their individual copper tap sampling results within three business days of learning of the results. The EPA is requiring the same delivery methods for notification of copper tap sampling results as for lead. In cases where copper samples are collected at the same time as lead, systems can combine the lead and copper results and required information into a single notice. Similar to the notice of lead tap sampling results, the notice of copper tap sampling results must include the results of copper tap water monitoring for the tap that was tested, an explanation of the health effects of copper as provided in appendix B to subpart Q of part 141 (Standard Health Effects Language for Public Notification), a list of steps consumers can take to reduce exposure to copper in drinking water, and contact information for the water system. The notice must also provide the MCLG and the action level for copper, both of which are 1.3 mg/L, and the definitions for these two terms from § 141.153(c).

c. Other Public Education Materials

i. Supplemental Monitoring and Notification

The EPA is finalizing the requirements, as proposed, for water systems to offer to sample the tap for lead for any consumer served by a lead, GRR, or unknown service line that requests it. Systems must deliver results of this on-request sampling in the same time frame of three business days required for results of compliance tap sampling. The EPA revised the proposed requirement from three calendar days to three business days. The EPA is finalizing flexibility for water systems to determine the sampling protocol for this supplemental monitoring, as proposed in the LCRI. For sites with a lead, GRR, or unknown service line, the sampling must capture the water stagnant in the service line as well as any premise plumbing (*e.g.,* first- and fifth-liter samples, sequential sampling, flush samples); however, the water system can determine the particular sampling protocol to capture water in the service line and premise plumbing.

The EPA is also clarifying in the final rule that when there is a systemwide lead action level exceedance, water systems must offer to sample the tap for lead for any consumer that requests it, and not just customers. As noted above, results of this on-request sampling must be delivered within three business days.

ii. Public Education After a Lead Action Level Exceedance

Under the final LCRI, CWSs that exceed the lead action level must deliver public education materials to bill paying customers and every service connection address served, as proposed. The public education materials must be written, meaning they can be printed (*i.e.,* delivered by mail or hand) or electronic (*i.e.,* delivered by email) materials. However, the public education cannot be oral (*i.e.,* delivered by phone call or voice message), unless this is done in addition to one of the other allowed delivery formats. The

EPA is requiring CWSs to conduct the public education activities under § 141.85(b)(2) and NTNCWSs to conduct the public education activities under § 141.85(b)(4) within 60 days of the end of the tap sampling period in which the exceedance occurred (*i.e.,* June 30 or December 31 for standard monitoring, or September 30 or the last day of an alternative four-month tap sampling period approved by the State for annual and reduced monitoring). The public education activities must always be conducted within this 60-day time frame, instead of allowing systems to wait 12 months to conduct public education when there are consecutive action level exceedances as previously required. If a State grants an extension for a water system to conduct the public education activities, the deadline must not extend beyond six months after the end of the tap sampling period in which the lead action level exceedance occurred. Extensions can only be granted for the activities in § 141.85(b)(2)(ii) through (vi) for CWSs and the activities in § 141.85(b)(4)(i) and (ii) for NTNCWSs. The proposed rule inadvertently left out this extension provision for NTNCWSs; therefore, the final rule includes a technical correction to reinstate the extension provision for NTNCWSs. These requirements in the final LCRI are the same as proposed, with the technical correction.

In the final LCRI, the EPA also revised the regulatory language in § 141.85(b)(2)(ii)(A) and (B) to clarify that the purpose of the requirements for community water systems to deliver public education materials to local public health agencies and other organizations after a lead action level exceedance is to reach ''consumers'' (*i.e.,* people who drink the water) who are most at risk rather than ''customers'' of the water system who may be paying the bill but not drinking the water (*i.e.,* a customer who is a property owner and renting their property). This is a clarifying edit which does not impact the activities that community water systems must conduct.

The EPA is finalizing the proposed content requirements with some additional required content in response to comments received on the proposed LCRI. Public education materials must include information about lead, GRR, and unknown service lines not only if the system has LSLs, but also GRR and unknown service lines. In addition to required LSL information, systems must include information about replacing GRR service lines and identifying the material of unknowns as well as information on how to access the system's service line replacement plan. Where the water system intends for customer payment for a portion of the replacement where it is required or authorized by State or local law or a water tariff agreement, the notice must also include information about financing solutions to assist property owners with replacement of their portion of a lead or GRR service line. Systems with known or unknown lead connectors in their inventory must also include information in the public education materials about accessing the inventory. The public education materials must include instructions for consumers to notify the water system if they think the material classification is incorrect.

All water systems, including NTNCWSs, must include information in the public education materials about lead in plumbing components and about how consumers can get their water tested, including information about the provision of supplemental monitoring and notification in § 141.85(c). In response to comments received on the proposed LCRI, the EPA is requiring the public education materials to explain that lead levels may vary and therefore lead exposure is possible even when tap sampling results do not detect lead at one point in time (§ 141.85(a)(1)(iii)(B)).

The EPA is requiring public education materials to include additional steps that consumers can take to reduce their exposure to lead in drinking water, including explaining that using a filter certified to reduce lead by an ANSI accredited certifier is effective in reducing lead levels in drinking water. Water systems must emphasize additional measures to reduce exposure to lead in drinking water for pregnant people, infants, and young children since they are at higher risk of adverse health effects from lead exposure. Water systems must also provide additional information about flushing the pipes, including noting that consumers served by LSLs and GRR service lines may need to flush for longer periods. In addition, water systems must include contact information for the State and/or local health department so that consumers can contact them for more information about lead. States may only approve changes to the content requirements of the public education materials if the State determines the changes are more protective of human health. This information is required not only in public education after a lead action level exceedance but any of the public education requirements that cite the steps for reducing exposure to lead in drinking water in § 141.85(a)(1)(iv), such as the consumer notice of lead tap sampling results and the notification of service line material.

iii. Public Education to Local and State Health Agencies

For the final LCRI, the EPA is allowing CWSs to provide local and State health agencies with public education and DSSA information via mail, email, or another method approved by the State (see § 141.85(i)).

d. Requirements for Language Updates and Accessibility

i. Lead Health Effects Language

For the final LCRI, the EPA is requiring the revised lead health effects language in public education materials, as proposed and previously described in section IV.J.2.d.i of this preamble.

ii. Translation Requirements

The EPA is requiring in the final rule all public education materials under § 141.85 to include (1) information in the appropriate language(s) regarding the importance of the materials, and (2) information where persons served by the water system may obtain a translated copy of the materials, or request assistance in the appropriate language(s), or the materials must be translated into the appropriate language(s). For the final rule, the EPA is also adding a requirement that States, as a condition of primacy for the LCRI, provide technical assistance to systems in meeting the requirement to provide translation assistance in communities with a large proportion of consumers with limited English proficiency. This can include providing water systems with contact information for inclusion in the system's public education materials where consumers can contact the State for translation assistance upon request. Other examples of technical assistance include providing resources for water systems to translate their public education materials, including EPA-provided translations of required content for public education materials (*e.g.,* health effects language, definitions) and translated templates through a website.

K. Additional Requirements for Systems With Multiple Lead Action Level Exceedances

1. Rationale and Proposed LCRI Revisions

While water systems must take actions to reduce lead levels in response to a systemwide lead ALE, such as installing or re-optimizing OCCT, these actions can take several years to be fully implemented. Consequently, the LCRI proposed requiring water systems to

conduct public education activities and make filters that are certified to reduce lead available to consumers in the event of multiple lead action level exceedances. These actions are intended to provide greater public health protection to drinking water consumers by educating consumers about filters and increasing the likelihood of their use. The EPA proposed requiring water systems to take additional actions in response to three lead ALEs within a rolling five-year period. Multiple ALEs are indicative of recurring high lead levels that warrant additional measures while OCCT and mandatory service line replacement are being implemented, or that longer-term measures are not effective at reducing lead levels below the action level (*e.g.,* a system that has re-optimized once and is meeting optimal water quality parameters). The EPA proposed the five-year period because it generally takes systems that long to conduct an OCCT study and to install treatment.

Three lead ALEs (in five years) is also used to identify water systems with a pattern of higher lead levels over time. Many water systems have one or two ALEs and do not have another, so three action level exceedances are a better indicator of longer-term problems. See the final LCRI Economic Analysis (USEPA, 2024a) chapter 3, section 3.3.5, Exhibit 3–31 for additional information on the percent of systems with two ALEs that go on to experience three ALEs. In addition, having three or more lead ALEs within five years is a sign that consumers are being continually exposed to elevated lead levels.

To prevent known or anticipated adverse health effects to the extent feasible, the EPA believes that while these water systems are taking actions to reduce lead in drinking water and continue to experience higher lead levels, they must provide additional public education on lead in drinking water and steps consumers can take to reduce their exposure, including how to properly use a filter, and make filters available to their consumers. Public education is effective for reducing lead exposures in drinking water, by influencing individuals' knowledge, beliefs, and behaviors, for example by making them aware of lead in their drinking water and actions they can take to reduce their exposure (see section IV.J.1 of this preamble). In addition, recent filter effectiveness studies conducted by the EPA have shown that properly installed and operated filters certified by an ANSI accredited certifier to reduce lead are effective at reducing lead in drinking water (Bosscher et al., 2019; Tang et al., 2023; Tully et al., 2023). Access is one factor that influences uptake of public health interventions. When filters or point-of-use devices and instructions on their proper use are made more accessible, consumers are more likely to use them (Reese et al., 2023; Mulhern et al., 2022). The EPA is requiring the public education materials to discuss the use of filters certified to reduce lead as one of the steps people can take to reduce their exposure to lead. Making filters available to consumers when a water system has multiple action level exceedances enhances existing public education messaging and reduces lead exposure if the filters are used properly. The EPA also finds that it is affordable and technically possible for water systems to make filters available for their consumers, as demonstrated by numerous systems that have provided filters to some or all consumers or as part of service line replacement programs, many of these at no direct cost to the consumer. Examples of communities that have implemented filter programs include Newark, New Jersey (City of Newark, n.d.); Pittsburgh, Pennsylvania (City of Pittsburgh, n.d.); Kalamazoo, Michigan (City of Kalamazoo, 2023); Benton Harbor, Michigan (Berrien County Health Department, 2023); Elgin, Illinois (City of Elgin, 2023); and Denver, Colorado (City of Denver, 2023). Furthermore, the EPA has made adjustments in the final LCRI to require water systems to start developing a plan for making filters available earlier so that the provision of filters to consumers is not unnecessarily delayed (see section IV.K of this preamble).

Under the proposed LCRI, if during a rolling five-year period there are three systemwide lead action level exceedances, a water system would be required to make available to all consumers pitcher filters or point-of-use devices that are certified by an ANSI accredited certifier to reduce lead, six months of replacement cartridges, and instructions for use within 60 days after the end of the tap sampling period in which it met the criteria for multiple lead action level exceedances. Replacement cartridges would be made available until there are no longer three action level exceedances in a rolling five-year period. No later than 30 days after the system has third ALE during a rolling five-year period, the water system would be required to provide a filter distribution plan to the State, and the State would be required to review and approve the plan within 15 days. If there is a subsequent ALE, the system would not be required to submit another filter plan unless the State requires it or if there are any changes to the filter plan. The filter plan would include a description of which methods the system will use to make filters and cartridges available and a description of how the system will address any barriers to consumers obtaining filters. In addition, the water system would be required to carry out at least one community outreach activity. This activity must discuss the multiple lead ALEs, the steps the system is taking to reduce lead in drinking water, and measures consumers can take to reduce their exposure to lead. The EPA proposed the following community outreach activities for systems with multiple ALEs: (1) conducting a townhall meeting; (2) participating in a community event where the system can make information about ongoing lead exceedances available to the public; (3) contacting customers by phone call or voice message, text message, email, or door hanger; (4) conducting a social media campaign; and/or (5) using another method approved by the State. The water system would be required to conduct at least one of the aforementioned activities once every six months. The EPA included these outreach requirements to increase transparency and protect public health by providing consumers information on how to minimize their risk of lead exposure. Water systems would be able to discontinue these measures when they no longer have met the criteria of three ALEs within a rolling five-year period.

2. Summary of Comments and the EPA's Response

The EPA received comments both in support and opposed to the proposed requirement for water systems to conduct additional measures (*i.e.,* outreach activities and making filters available) in response to multiple ALEs. Some thought the proposed requirement should provide greater public health protection by requiring delivery of filters to all consumers, including at no charge. Others recommended that the EPA require water systems to make water filters available to only those customers served by lead, GRR, and unknown service lines, due to the cost of the filters as well as logistical challenges associated with making filters available to all consumers, especially for large water systems.

The EPA disagrees with the recommendation to limit the requirement to make point-of-use devices and pitcher filters only available to households or consumers that are currently being served by a lead, GRR,

or unknown service line. The EPA recognizes that LSLs are a significant source of lead in drinking water; however, lead can also enter drinking water from other sources, such as premise plumbing, affecting persons with or without LSLs. Therefore, availability of point-of-use devices and pitcher filters to all consumers ensures greater protection of the public from lead exposure in communities with recurring high lead levels.

The EPA recognizes the possible economic and logistical challenges that some systems may face in making available point-of-use devices or pitcher filters to all consumers. The EPA disagrees with comments that assumed or recommended water systems provide filters directly to all consumers. The proposed LCRI regulatory text at § 141.85(j) regarding the requirement for systems to make available to all consumers pitcher filters or point-of-use devices does not mean that systems are required to deliver filters, although that would be one option for a system to meet the requirement to make filters available. The rule allows systems (with the approval of the State) to determine the most appropriate way to meet the requirements, without prescribing specifically how systems must meet that requirement. For example, a system may decide to use more than one way to make filters available, such as operating a distribution center combined with providing at-home delivery on request, to accommodate consumers with different accessibility needs based on transportation and other considerations.

The EPA requested comment on using the proposed criteria of three ALEs in a rolling five-year period to identify systems with ''multiple ALEs.'' Some commenters raised issues with setting the criteria for ''multiple ALEs'' at three ALEs in five years and suggested alternative criteria. For example, a commenter suggested that the number of exceedances in the ''multiple ALEs'' criteria should be based on the number of customers. Another commenter stated that the three ALEs in five years metric would be ''at odds'' with these same systems' ability to remove LSLs over the same five-year period because systems would have to allocate limited resources to simultaneously implement both requirements. On the other hand, some commenters stated that three ALEs is ''too lenient'' or that the filter provision should be required after a single lead ALE, rather than three.

After consideration of these comments, the EPA is finalizing the criteria for multiple lead ALEs consistent with the proposal; specifically, a system with at least three lead ALEs in a rolling five-year period must meet the public education treatment technique requirements at § 141.85(j). The five-year timeframe was selected because it typically takes five years to study, select, install, and operate OCCT. The EPA disagrees with requiring filters be made available after one ALE as the system will be undertaking multiple activities following a single ALE including public education described in section IV.J.4.c of this preamble that will advise consumers to take actions to reduce their exposure, among other ongoing public education activities (see section IV.J.4 of this preamble). Following the ALE the system will be involved in activities to install or re-optimize OCCT, as appropriate (see section IV.F.3 of this preamble). Three ALEs is a more accurate indicator of sustained high lead levels that would not be timely reduced by new or re-optimized CCT and which therefore merits the rule requirement to make filters available to reduce these exposures over a sustained period.

Some commenters recommended requiring water systems to submit the filter plan after the second ALE rather than the third ALE. Similarly, another commenter recommended requiring water systems to start working on filter plans earlier than the proposed 30 days after the third ALE to have more time to provide filters. The EPA agrees with comments that recommend requiring submission of a filter plan after the second ALE instead of the third ALE. This provides water systems more time to prepare to make filters available by requiring water systems to submit the filter distribution plan to the State within 60 days after the second ALE in five years rather than within 30 days of the third ALE. The State will also have 60 days to review and approve the plan, rather than the proposed 15 days. This provides States with time to engage with the systems on their filter plans, as appropriate, and coordinate to address challenges with making filters available to consumers. By requiring systems to submit the filter plan after the second ALE, systems will be more likely to successfully implement the plan should the water system have a third ALE.

Following approval of the filter plan, the water system will have time to resolve any potential logistical and financial challenges in advance of when they may need to implement the filter plan should the water system exceed the lead action level for a third time in a five-year period. The EPA encourages systems to plan for making filters and cartridges available at no direct cost to low-income consumers, at a minimum. In addition, the water system has 60 days from the end of the tap sampling period when the third ALE occurs to implement the plan and make filters available to all consumers.

Some commenters raised concerns about the proposed 60-day timeframe for water systems to make filters available after multiple ALEs. Specifically, some commenters questioned whether it would be feasible for water systems to make filters available to all consumers within 60 days. In particular, some commenters mentioned that pitcher filters would be hard to obtain and provide to consumers within that timeframe. Another commenter requested that water systems be allowed to request a time extension to make filters available. In contrast, the EPA also received comments requesting a shorter timeframe for making filters available as proposed. A commenter suggested that water systems should be able to deliver filters in 30 days.

The EPA disagrees that 60 days may not be enough time for water systems to obtain and make filters available to consumers. The final LCRI requires filters be made available 60 days after the end of the tap sampling period when the third ALE occurs (§ 141.85(j)(2)). Since systems will have already prepared the filter plan following the second ALE, with the 60-day time limit in mind, they will be prepared to implement it, such as procuring the initial allocation of filters and handling the logistics of making them available to their consumers quickly. As a result, 60 days is a feasible amount of time needed to make filters available to consumers. Also, the EPA disagrees with shortening the time to make filters available to 30 days because that may not provide water systems sufficient time to implement their plan.

The EPA requested comment on the market's ability to correct for potential material shortages and provide enough filters to comply with the proposed LCRI. For the proposed LCRI, the EPA assumed that the market would correct for any potential shortages, including for filters, in the three years before the LCRI compliance date. The EPA received comments from a filter manufacturer and a filter certification association supporting the EPA's assumption that the market would correct for potential shortages, noting that water systems would be able to purchase many types of filters in large quantities. The EPA also found additional data on the growing water filtration market that confirms the EPA's assumption in the proposed rule that the market would correct on its own to meet the demands expected as a result of the LCRI requirements (ICF, 2024c).

Some commenters raised concerns about the supply of filters if many water systems have to implement these measures at the same time, but did not provide any information to support the concern. Therefore, for the final LCRI, the EPA affirms its assumption at proposal that the market has the ability to correct for potential material shortages and provide enough filters for systems to with multiple ALEs meet the requirement to make filters available to all consumers.

Some commenters provided input on the proposed public education activities for systems with multiple lead ALEs. A commenter suggested increasing the use of public awareness campaigns. Another commenter suggested requiring water systems with multiple ALEs to conduct at least two public education activities rather than only one additional activity as proposed to be able to reach more people. Another commenter suggested that the required outreach activity in the rule should be based on system size; larger water systems should be required to conduct more frequent and more extensive outreach than small systems (*e.g.,* media campaigns) since they serve a larger population.

The EPA recognizes the importance of public education, which is why the LCRI requires systems with multiple ALEs to conduct a community outreach activity in § 141.85(j)(4)(i) through (v) in addition to the public education activities that are required in the event of each single lead ALE in § 141.85(b). The EPA expects this additional community outreach activity will better protect public health than the public education required by a single ALE alone by prompting consumers to take voluntary actions to reduce their exposure to lead during periods of recurrent action level exceedances by providing information to consumers about the multiple ALEs, steps the water system is taking to reduce lead, how consumers can minimize their lead risks, and how to obtain a filter certified to reduce lead. As provided in the final LCRI at § 141.85(j)(4), the community outreach activity must: (1) discuss the multiple ALEs that have occurred; (2) lay out the steps the water system is taking to reduce lead in drinking water; (3) inform consumers of measures they can take to reduce their risk; and (4) provide information on how to obtain a filter. The EPA disagrees with requiring two additional outreach activities, instead of one additional activity every six months, for water systems with multiple ALEs because these water systems are already required to conduct three other outreach activities and other public education tasks following every lead ALE in accordance with § 141.85(b)(2). The EPA believes the requirement for at least one additional outreach activity every six months and making filters available in accordance with § 141.85(j), along with the other public education requirements under § 141.85(b)(2), will ensure consumers have access to information and resources to reduce their risk of lead exposure while water systems are working to address the underlying problem through longer-term efforts like OCCT and LSLR. However, the EPA notes that these requirements do not prohibit water systems from implementing additional and other types of outreach activities from the list in § 141.85(j)(4). Systems may do more outreach than required to best meet the needs of their community. In addition, the EPA disagrees with specifying the type and frequency of the outreach activity based on system size because the agency does not want to limit water system's ability to choose the most effective activity, as the water system is in the best position to determine how to reach all their consumers, based on the community they serve. Therefore, the final LCRI provides water systems the flexibility to consider community-specific information, such as water system size, to inform which one of the five outreach options for outreach activities offered in the LCRI the water system chooses to conduct. As noted above, the agency believes requiring at least one outreach activity every six months is sufficient and the water system may conduct additional activities as needed.

The EPA requested comment on whether to allow systems with multiple lead action level exceedances to consult with the State on alternative requirements and for States to determine the appropriate action. Most commentors supported authorizing the State to determine appropriate actions as alternatives to the LCRI requirements. The main justification provided by commenter is that States have a better understanding of the unique situations of water systems and determine more appropriate actions tailored to the water system.

The EPA does not agree with these comments. The EPA determined that when any systems has multiple ALEs, additional public education is needed and making filters available to consumers will prevent adverse public health impacts as a result of the sustained ALEs. Systems are free to implement additional measures appropriate for their community. As there is no safe level of lead exposure from drinking water, a sustained ALES is indicative of the need for these specific additional actions to help expeditiously reduce exposure to lead in drinking water while the system works to comply with the OCCT requirements triggered by the ALE, or if longer-term measures to control corrosion and remove service lines are not effective at reducing systemwide lead levels to below the action level. Nevertheless, the EPA agrees that some level of State involvement is important to help ensure the water system has an appropriate plan in place and therefore, is requiring the State to approve the system's filter plan. In the final rule, the requirement of state approval of the filter plan will give the State an opportunity to work with the water system to develop a plan to make filters available for all consumers.

The EPA requested comment on whether to include a provision where the State has discretion to allow systems to discontinue actions to address a sustained ALE sooner than otherwise required if the system has taken tangible actions to reduce lead levels in response to multiple ALEs. In the proposed LCRI preamble, the EPA gave the example of a system that has taken actions ''*e.g.,* installs OCCT or re-optimized CCT, completed mandatory service line replacement and is at or below the lead action level for two consecutive monitoring periods.'' Commenters generally supported the approach to provide the State with that discretion; one commenter disagreed with it. Another commenter recommended changing the LCRI to allow water systems to discontinue the actions.

The EPA agrees with commenters that States should be able to allow water systems with multiple ALEs to discontinue the required actions if the water system is at or below the lead action level for two consecutive tap monitoring periods and if the water system has taken actions to reduce lead levels. The EPA is including this discretionary authority in the final LCRI because the additional actions taken to reduce lead levels, such as re-optimized OCCT or completed LSLR program, and lack of ALEs are indications that lead corrosion is being controlled. Therefore, the final rule adds a provision to give States the discretion to allow a water system to discontinue the required actions under § 141.85(j) taken after multiple ALEs earlier if: (1) the system has taken actions to reduce lead levels, such as re-optimized OCCT or completed LSLR; and (2) the system is at or below the lead action level for two consecutive tap monitoring periods.

3. Final Rule Requirements

For the LCRI, the EPA is finalizing requirements for water systems related to multiple lead action level exceedances at § 141.85(j). Water systems are required to take additional actions if the system exceeds the lead action level three times during a rolling five-year period. The first rolling five-year period ends five years after the compliance date specified in § 141.80(a)(3) followed by assessments every six months thereafter. No later than 60 days after the tap sampling period in which a water system meets the criteria described above, a water system must make available to all consumers pitcher filters or point-of-use devices certified by an ANSI accredited certifier to reduce lead, six months of replacement cartridges, and instructions for use. A water system must continue to make replacement cartridges available until the system meets the requirements to discontinue actions as described below.

To provide additional time for systems to prepare for filter availability, the final LCRI requires water systems to submit a filter plan to the State no later than 60 days after the system exceeds the lead action level for the second time in a rolling five-year period (§ 141.85(j)(3)). This plan would include: (1) a description of the methods that would be used to make filters and filter cartridges available to consumers and (2) a description of how the system will address any barriers in making these filters available. The State must review and approve the system's filter plan within 60 days. This provides time for the State to engage with the water system on the filter plan, as needed, and time for the system to make any necessary updates before the need to implement the plan.

In addition to providing filters, following the third action level exceedance in a five-year rolling period, the final LCRI requires water system to conduct at least one community outreach activity in addition to the required outreach specified in the public education section (see § 141.85(b)(2)) for systems that exceed the lead action level. The EPA is clarifying for the final LCRI that water systems must conduct at least one of the activities within six months of the start of the tap monitoring period after the most recent lead ALE. In the proposed rule, one of the activities included conducting a townhall meeting; the final rule revised this to be a public meeting more generally since a townhall meeting may imply government involvement.

Under the final LCRI, water systems may discontinue making filters or point-of-use devices available and conducting community outreach activities when there are no longer three ALEs in a five-year period (§ 141.85(j)(6)). The final LCRI provides States discretion to allow a water system to discontinue these additional requirements earlier if the system is at or below the action level for two consecutive tap monitoring periods and the water system has taken actions to reduce lead levels (*e.g.,* re-optimized OCCT, completed LSLR) (§ 141.85(j)(6)).

L. Lead Sampling at Schools and Child Care Facilities

1. Rationale and Proposed LCRI Revisions

For LCRI, the EPA proposed to retain many of the 2021 LCRR requirements in § 141.92 for CWSs to conduct public education and sample for lead in the schools and licensed child care facilities they serve. Children are especially vulnerable to lead exposure and spend a significant amount of time in these facilities. While the EPA is aware that some States have requirements for lead sampling in schools and child care facilities, including several States that have passed new laws since the LCRR was promulgated, the EPA is also aware that some schools or child care facilities have not been or are not being tested under existing State or local requirements or through other voluntary programs (USGAO, 2018; USEPA, 2023a, chapter 3, section 3.3.10). Accordingly, many schools or child care facilities may not have experience with lead in drinking water testing. The EPA promulgated these requirements in the 2021 LCRR as part of the public education treatment technique in order to educate schools and licensed child care facilities about the risk from lead in premise plumbing and the importance of sampling for lead in drinking water, to provide these entities with some experience testing for lead in drinking water, and to help inform their decisions to mitigate lead risks, including by establishing their own sampling programs (86 FR 4232, USEPA, 2021a; USEPA, 2020e). This includes providing schools and child care facilities with the EPA's ''3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities—A Training, Testing and Taking Action Approach (3Ts),'' which was developed to assist schools, child care facilities, and States with addressing lead exposure (USEPA, 2018).

While larger buildings such as schools are not likely to be served by LSLs, premise plumbing may contain lead. Additionally, large buildings, such as schools, can have a higher potential for elevated lead levels. This is because, even when large buildings are served by a water system with well-operated OCCT, they may have lead in drinking water due to lead in premise plumbing, larger and more complex plumbing configurations, and inconsistent water use patterns (*e.g.,* summer, holiday, or other breaks) that can result in longer stagnation times (88 FR 84956, USEPA, 2023a; Barn et al., 2014; Deshommes et al., 2016; Proctor et al., 2020). As described in the proposed LCRI preamble, due to these factors, a water system's 90th percentile lead level is not necessarily reflective of lead levels in schools, and water system adjustments to OCCT will likely not address elevated lead levels in schools. Therefore, setting additional treatment technique requirements for corrosion control would not be effective (88 FR 84957, USEPA, 2023a). Therefore, the EPA has determined that public education and sampling at schools and child care facilities is an element of the treatment technique rule for public education and not CCT. Accordingly, the EPA determined the public education treatment technique is feasible for the reasons cited in section IV.J.1 of this preamble, including for CWSs to conduct public education and sampling at these facilities to contribute to increased awareness of lead in drinking water in these facilities (88 FR 84957, USEPA, 2023a). Also see section IV.L.2 of this preamble for a discussion of the EPA's authority to require CWSs to conduct these activities.

For LCRI, the EPA proposed to retain the requirements from the 2021 LCRR for CWSs to conduct public education and sampling in the schools and licensed child care facilities that they serve. The EPA proposed minor changes to clarify the intent of the provisions and proposed two new waiver provisions in § 141.92(h) to increase the flexibility of States to waive sampling requirements for CWSs where they would be duplicative of alternative sampling programs that would meet the requirements. The EPA also proposed to reduce the time frame from annually to 30 days for when CWSs must submit sampling results to the State and State and local health agencies.

In developing public education and sampling requirements for schools and child care facilities under the 2021 LCRR and LCRI, the EPA is authorized under SDWA to establish NPDWRs that are legally enforceable standards for PWSs as defined in SDWA section 1401(4) and § 141.2. The EPA does not have the authority under SDWA section

1412 to require schools and child care facilities that are not regulated as PWSs to act under an NPDWR. The EPA did not propose public education and sampling requirements for schools and child care facilities that are regulated as PWSs because these facilities must comply with NPDWRs, including the LCRI, unlike schools and child care facilities that are not PWSs. This includes requirements to monitor for lead and copper in drinking water (§ 141.86), conduct public education (§ 141.85), conduct mandatory LSLR (§ 141.84), optimize or re-optimize OCCT (§§ 141.81 and 141.82) or implement a small system flexibility as applicable (§ 141.93). Requiring schools and child care facilities that are regulated PWSs to comply with the requirements of § 141.92 would be duplicative. The EPA intended for these requirements to only apply to CWSs as part of the public education treatment technique to educate the schools and licensed child care facilities they serve on the risks of lead in their buildings so that schools and child care facilities can take voluntary actions.

2. Summary of Public Comments and the EPA's Response

a. General Requirements

The EPA received comments stating that the school and child care sampling requirements should be removed from the final rule because the EPA does not have the authority under SDWA to require PWSs to sample at these locations. Conversely, the EPA received comments requesting that the EPA require water systems to take additional actions in schools and child care facilities, including installing filters certified to reduce lead in drinking water and more frequent and comprehensive tap sampling. These commenters indicated that the proposed requirements are not effective as a component of the public education treatment technique because they will not protect children's health. They stated that the sampling would be only voluntary and limited, and would not require water systems to take remediation actions or publicly post results. In turn, they provided corresponding suggestions for new or more stringent requirements for addressing lead in schools and child care facilities.

The EPA disagrees with commenters who stated that the EPA does not have the authority to include requirements for school and child care lead sampling under SDWA. The EPA notes that it is not accurate for commenters to frame the EPA's school and child care sampling requirements under LCRI as regulating those facilities in lieu of water systems. As stated above, the EPA is authorized under SDWA section 1412 to establish NPDWRs that are legally enforceable standards for PWSs as defined in SDWA section 1401(4) and § 141.2. Therefore, the EPA has the authority under SDWA section 1412 to require CWSs, which are a subset of PWSs, to comply with lead tap water requirements, which include conducting public education and sampling for lead in schools and child care facilities as part of the treatment technique for public education. Further, the EPA's authority to promulgate the requirement for CWSs to conduct public education and sampling at these facilities is under the EPA's authority to promulgate a treatment technique rule to ''prevent known or anticipated adverse effects on the health of persons to the extent feasible'' (SDWA section 1412(b)(7)(A)). As noted above, children are especially vulnerable to lead exposure and spend a large portion of their day in schools and child care facilities. As part of the feasibility demonstration for public education (see section IV.J.1 of this preamble) and in accordance with SDWA section 1412(b)(7)(A), the EPA determined it is feasible for CWSs to conduct public education and sampling at these facilities to contribute to their increased awareness of lead in drinking water and thus facilitate actions that the schools and child care facilities, or the families of children who attend, can take to reduce lead exposures. Therefore, the EPA is authorized to and made the requisite determination under SDWA section 1412(b)(7)(A) to promulgate a treatment technique for public education and to include water system sampling requirements at schools and child care facilities that are feasible and can reduce lead exposures. In addition, consistent with every lead and copper NPDWR, CWSs already routinely conduct public education activities to customers within their service area and have experience with conducting consumer-requested sampling (see § 141.85(c), 56 FR 26500–26503, USEPA, 1991). As described in section IV.L.1 of this preamble, the sampling requirements are part of public education to educate schools and child care facilities and their users about the risks from lead in premise plumbing and the importance of sampling for lead in drinking water, to provide them with some experience testing for lead in drinking water, and help inform their decisions to mitigate lead risks, as appropriate, including potentially establishing their own testing program for which Federal funding is available (see section III.G of this preamble).

The EPA also disagrees with commenters who stated that the EPA should require water systems to install filters in all schools and child care facilities either in lieu of or in addition to sampling. As discussed in section IV.L.1 of this preamble, elevated lead levels in larger buildings such as schools are generally due to conditions outside of the water system's control (*e.g.,* complex premise plumbing arrangements, inconsistent water use patterns), and persist even in systems with well-operated OCCT. While it is within the control of water systems to conduct public education activities and sampling, water systems are typically not in control of premise plumbing in schools and child care facilities. While water systems could have access to drinking water outlets in schools and child care facilities to install and maintain filters (*e.g.,* if a school or child care facility gives a PWS permission to access the property for this purpose), the EPA notes that premise plumbing is typically not part of the PWS distribution system and CWSs typically are therefore not responsible for taking such actions. Notably, the ''filter-first'' legislation cited by commenters impose requirements on schools and child care facilities, not on PWSs, to install filters, conduct sampling, and ensure maintenance (*e.g.,* City of Philadelphia, 2022; State of Michigan, 2023).

Additionally, requiring water systems to install and maintain filters in all the schools and child care facilities they serve would impose a significant financial and technical burden on water systems. While commenters argue that installing and maintaining filters is more cost effective than a sampling program, the agency notes that the commenters assumed a sampling program that included sampling of all outlets used for human consumption twice a year and replacement of 40 percent of the faucets sampled with lead-free components in the first year. This assumption is significantly more expansive than the requirements for CWSs under § 141.92. See section IV.L.2.d of this preamble for a discussion on the scope and frequency of sampling. Furthermore, as stated in section IV.L.1 of this preamble, the purpose of these requirements is to provide public education to schools and child care facilities in the form of information about the risks of lead in their facilities, experience with how to sample for lead, and the 3Ts guidance to inform potential actions (*e.g.,* additional sampling, remediation,

installation of filters). Installation and maintenance of filters in all schools and child care facilities served by a water system is outside of the intended scope of the requirements and is not necessary to fulfill the stated purpose of the requirements as a public education program under the public education treatment technique. Therefore, schools and child care facilities and not water systems are generally responsible for addressing premise plumbing and remediation actions within their buildings, including installing filters and/or bottle filling stations. For further discussion and additional reasons supporting the EPA's decision not to require water systems install and maintain filters in addition to sampling requirements as part of public education, see discussion of remediation in section e. below.

The EPA also disagrees that the requirements will not be effective for the purposes of providing public education to schools and child care facilities because the LCRI does not include a specific frequency or number of samples (*e.g.,* semi-annually or annually, all taps used for cooking and drinking), or requires remediation activities, or specific reporting requirements, as suggested by the commenters. In promulgating these requirements as part of LCRI, the EPA does not intend for them to be a replacement for more comprehensive testing in schools and child care facilities. The EPA anticipates they will be effective to achieve their intended purposes of providing schools and child care facilities information about lead risks in their buildings and experience with testing for lead to help inform decisions for addressing lead, as stated above. As noted in section V.L.1 of this preamble, the EPA is aware that many schools and child care facilities are not knowledgeable about drinking water lead risks and currently do not receive direct information from an entity such as the water system or the State about lead in drinking water and approaches to reduce risk (USGAO, 2018; final LCRI Economic Analysis (USEPA, 2024a), section 3.10.10). Furthermore, as noted above, many schools and child care facilities do not have direct experience with sampling. The EPA previously developed guidance for schools and child care facilities (*i.e.,* the 3Ts) to assist in addressing lead in drinking water. There have been significant Federal resources provided to States to support voluntary programs (88 FR 84957, USEPA, 2023a). The EPA anticipates that the requirements in § 141.92 will build upon these non-regulatory efforts and increase school and child care facility awareness of lead in drinking water in their buildings and provide them with tools to take additional actions. For a discussion on the limitations of requiring schools and child care facilities to participate in sampling, see the below section c on public education and outreach.

b. Applicability

The EPA received public comments about which schools and child care facilities are covered by the requirements for school and child care sampling in § 141.92(a). The EPA received comments supporting the proposed revision for water systems to submit an initial list of the schools and child care facilities that they serve to the State by the LCRI compliance date. However, some commenters indicated that States should not be required to review the list for accuracy, stating that State drinking water programs do not have enough information or resources to assess the validity of the list. The EPA also received public comments requesting clarification as to whether schools and child care facilities not covered under the requirements in § 141.92(a) must be included on the list. The EPA also received comments that the EPA should not exclude schools and child care facilities that were constructed or had full plumbing replacement after January 1, 2014 or the date a State adopted standards that meet the definition of lead free in accordance with section 1417 of SDWA; these comments noted that lead-free plumbing materials could still contain lead. The EPA received comment that schools and child care facilities that are served by a lead, GRR, or unknown service line should not be excluded. The EPA also received comments stating the agency should require schools and child care facilities that are regulated as NTNCWSs to take additional actions, such as installing filters on all outlets used for cooking and drinking.

The EPA is finalizing the proposed requirement for water systems to submit the initial list of schools and child care facilities to the State by the LCRI compliance date in § 141.92(b)(1). The EPA proposed this requirement because while the 2021 LCRR required CWSs to develop a list of schools and child care facilities that they serve by the rule compliance date and to send an updated list to the State or certify that the list has not changed at least once every five years, there was no initial requirement to submit the list to the State by the compliance date. The submission of the initial list at the time systems must begin to comply with the requirements of § 141.92 rather than five years later is a necessary prerequisite for State oversight and to ensure compliance with regulatory provisions that support health protection and public education in schools and child care facilities (88 FR 84956, USEPA, 2023a). The EPA disagrees with commenters who indicated that the State should not review the list for accuracy. While States may not be able to confirm every individual entry on the list, States must ensure that systems have appropriately applied the definitions of schools and child care facilities in § 141.2 to identify the schools and child care facilities they serve. Additionally, the EPA anticipates that State drinking water programs may be able to access information about schools and licensed child care facilities from other State or local agencies to assist CWSs in developing the lists. The EPA anticipates States may be in a good position to help systems, hence, this requirement facilitates that support. The expectation for State review is described in § 142.16(d)(12). See section V.C of this preamble for more discussion about the special primacy requirements associated with § 141.92.

While § 141.92(a) exempts CWSs from conducting public education and sampling in schools and child care facilities based on the date of adoption of the revised ''lead-free'' definition in accordance with section 1417 of SDWA, the EPA agrees that it is ambiguous whether these excluded facilities must be included on the list of schools and child care facilities served by the CWS in § 141.92(b). The provision in § 141.92(a)(1) requires CWSs to conduct public education and lead monitoring at the schools and licensed child care facilities they serve with the stated exceptions. The list is intended to assist CWSs in fulfilling the public education and sampling requirements of § 141.92 and for State oversight. The EPA did not intend for CWSs to include schools and licensed child care facilities on the list that are excluded under § 141.92(a). The agency notes the requirements for conducting public education in schools and child care facilities in § 141.92(c) and sampling in § 141.92(d) and (e) all reference the schools and licensed child care facilities identified in the list in § 141.92(b). To be responsive to these commenters and provide clarity, the EPA added the phrase ''that meet the criteria of paragraph (a)'' in § 141.92(b)(1) in the final LCRI.

The EPA disagrees with commenters who said that water systems should conduct public education and school sampling in facilities regardless of construction date. The EPA excluded facilities based on the date of adoption

of the revised ''lead-free'' definition in accordance with section 1417 of SDWA because these facilities are not likely to contain significant lead sources (USEPA, 2020c). As noted in section IV.A of this preamble, plumbing certified as ''lead free'' may still have an allowable level of lead; however, contribution of lead to drinking water from these sources is low. Additionally, plumbing replacement with new plumbing materials is frequently conducted as a remediation approach to address sources of lead. Water system resources are best used for public education and sampling in schools and child care facilities with more significant sources of lead rather than at sites with lead-free plumbing. If schools or child care facilities that are newly constructed or have conducted plumbing replacements to remove sources of lead have potential concerns about lead in drinking water, those facilities can choose to conduct their own sampling. However, the EPA is not requiring CWSs to conduct public education and lead sampling at these schools and child care facilities in the final LCRI.

The EPA agrees that any school or child care facility that has undergone full plumbing replacement or were constructed after the date of the ''lead free'' definition was adopted should not be excluded if they are served by LSLs. LSLs were generally not constructed with an interior diameter greater than two inches, therefore they are typically connected to single family homes or buildings with limited number of units (USEPA, 2022c). While larger schools and child care facilities are therefore unlikely to be served by an LSL, it would be inconsistent to exclude schools and child care facilities on the basis of meeting the ''lead free'' definition unless the service line is also non-lead. The EPA notes that this is consistent with the criteria for full plumbing replacement for small systems under § 141.93(c)(2). The EPA is revising § 141.92(a)(1) in the final LCRI to add a clause § 141.92(a)(1)(ii), which specifies that the schools and child care facilities that were constructed or had full plumbing replacement after the ''lead free'' date are not served by a lead, GRR, or unknown service line.

The EPA disagrees with commenters who suggest the EPA set different requirements for schools and child care facilities that are regulated as NTNCWSs. The EPA notes these commenters did not provide sufficient information supporting their recommendations about specific requirements for the agency to be able to evaluate how or why these water systems should be regulated differently. In the 2021 LCRR and in the LCRI proposal, the EPA did not propose requiring NTNCWSs that are also schools and child care facilities to meet the requirements of this section. The purpose of the requirements in § 141.92 is to further public education for schools and child care facilities that are served by CWSs. Schools and child care facilities that are regulated as PWSs already have knowledge about lead sources in their buildings and experience with actions like sampling and remediation. The agency notes that these NTNCWSs are required to take other actions under the LCRI as applicable that would address lead in these facilities including public education, service line replacement, and potential installation of treatment or implementation of a small system flexibility. Therefore, the requirements of § 141.92 would be duplicative and would not provide the public education benefits as intended for schools and child care facilities that are not PWSs. Based on the EPA's intent to regulate all NTNCWSs the same across the LCRI and the lack of information submitted, the final rule does not include different requirements for schools that are NTNCWSs.

c. Outreach to Schools and Licensed Child Care Facilities

Some commenters disagreed with the agency's different proposed approaches for outreach to elementary schools and child care facilities versus secondary schools for the first five years after the compliance date. Some commenters stated that all schools and child care facilities should be treated the same, with the more direct outreach that is required for elementary schools and child care facilities to be extended to secondary schools. Others suggested only requiring CWSs to offer sampling on request and not require systems to attempt to schedule sampling for the elementary schools and child care facilities during the first five years following the LCRI compliance date, stating that it would simplify the rule. These commenters indicated that all sampling is ''voluntary'' because elementary schools and child care facilities can decline sampling or not respond to outreach when contacted by the water system during the first five years. Some commenters stated that the EPA should make the sampling mandatory such that all schools and child care facilities are sampled, stating that a voluntary program will lead to schools and child care facilities not being sampled for lead. The EPA also received comments suggesting that the EPA allow CWSs to only conduct outreach to a school district or central office that manages child care facilities instead of each individual site, stating that individual outreach would circumvent official lines of communication. Still others requested that the agency specify that CWSs are not required to provide information related to a lead action level exceedance under the requirement in § 141.92(c) for CWSs to provide information to schools and licensed child care facilities consistent with § 141.85(a)(1), stating such information would not be relevant.

The EPA disagrees with commenters who stated that all schools and child care facilities should be treated the same under § 141.92. The EPA notes that the primary difference between the CWS requirements for elementary schools and child care facilities and secondary schools is the type of outreach that the system must conduct. The EPA is maintaining different requirements for CWS outreach to elementary schools and child care facilities compared to secondary schools during the first five years following the LCRI compliance date because children under the age of six are at the greatest risk of adverse health effects due to lead exposure (CDC, 2022a). Requiring CWSs to conduct more intensive outreach to elementary schools and child care facilities relative to secondary schools during the first five years after the LCRI compliance date prioritizes sampling in the facilities serving children with the greatest risks associated with lead exposure and provides this group of schools and child care facilities with the opportunity to have more direct information. Specifically, the final LCRI requires water systems to provide more direct outreach to these schools and child care facilities in the first five years by mandating the water system make at least two separate outreach attempts to schedule sampling. Conversely, CWSs are required to provide an annual notice to secondary schools who must request sampling. This approach will reduce the overall burden on CWSs to conduct outreach and enable them to focus on facilities with the subpopulation most susceptible to experiencing health risks from lead while still maintaining an opportunity for secondary schools to be sampled if they request it. It is for these same reasons that the EPA disagrees with commenters who say that CWSs should only offer sampling on request to the elementary schools and licensed child care facilities as required for the secondary schools. While the EPA agrees with commenters who said that the sampling requirements are voluntary

on the part of the school or child care facility, the EPA estimated in the 2021 LCRR that the more extensive outreach for elementary schools and child care facilities was likely to result in a higher level of participation relative to sending out letters offering sampling to schools and child care facilities (86 FR 4232, USEPA, 2021a). Regardless of the outreach required, all schools and licensed child care facilities served by the systems have the same opportunity to be sampled and at the same frequency.

The EPA acknowledges that some schools and child care facilities will decline or not respond to CWS outreach. However, the EPA disagrees with commenters that the agency can require that all schools and child care facilities be sampled. The EPA is authorized under SDWA to establish NPDWRs that are legally enforceable standards that apply to PWSs as defined in SDWA section 1401(4) and § 141.2. The EPA does not have the authority under SDWA section 1412 to require schools and child care facilities that are not regulated as PWSs to act under an NPDWR to either allow CWSs to sample within the schools and child care facilities or to require the facilities themselves to conduct sampling or undertake other actions. Therefore, the EPA does not have the authority to require a school or child care facility to allow a CWS to conduct sampling. Schools and child care facilities may not consent to tap sampling in their buildings and CWSs do not have control over these facilities. Additionally, a CWS cannot be in violation of the LCRI where a school or child care facility declined to participate in lead sampling because CWSs do not generally have control over these facilities.

The EPA disagrees with commenters who stated that CWSs should only be required to conduct outreach to administrative entities, such as school districts or central offices, instead of individual schools and child care facilities. As described in section IV.L.1 of this preamble, these requirements are part of the public education treatment technique. As such, it is important that each school and licensed child care facility receive the required information about lead in drinking water directly from the CWS. While CWSs may wish to and can choose to involve an administrative entity as part of school and child care facility outreach, such as copying these entities on the outreach materials or working with them in some way, the EPA does not agree that offering this information to individual facilities would overstep the administrative chain of command. For example, individual schools typically have their own school-specific administration and facilities management in addition to school district-wide administration. Schools and child care facilities can determine for themselves if they must consult with a central office or other administrative entity before proceeding with lead sampling. Additionally, neither the EPA nor the CWS can require an entity such as a school district or central office to disseminate information to individual schools and child care facilities. The requirements are intended to provide each school and child care facility with information about the health risks of lead, the 3Ts, and information about sampling. The agency notes that there may be instances where collaborating with school districts or other entities may help encourage participation and build connections between schools and child care facilities and water systems. However, the agency also anticipates that information may not be disseminated to the individual schools and child care facilities and that coordinating sampling and answering questions through an intermediary may be inefficient. While a CWS may choose to include outreach to an administrative entity (*e.g.,* a school district), the agency is not allowing CWSs to conduct outreach to these entities in place of outreach to the schools or child care facilities they serve. The EPA is concerned that the suggested revision would reduce the effectiveness of the requirements by reducing the likelihood that individual schools and child care facilities would receive the information.

The EPA agrees with the comment that the information about health risks that CWSs are required to be provided schools and child care facilities under § 141.92(c)(1) should not include information that refers to a lead action level exceedance, because it is not relevant for the purposes of § 141.92. Therefore, the EPA is revising § 141.92(c)(1) in the final LCRI to specify CWSs must provide information about health risks from lead in drinking water consistent with § 141.85(a)(1)(ii) through (iv) and (vi). This omits only the content in § 141.85(a)(1) that is directly related to a lead action level exceedance. The agency notes that a school or child care facility would receive public education that includes all of the information in § 141.85(a)(1) if the system has an action level exceedance in accordance with § 141.85(b).

d. Sampling

The EPA requested comments about whether the agency should require CWSs to collect more samples and/or more frequently in schools and child care facilities. The EPA received many comments stating that the EPA should require more frequent sampling at more taps. Suggestions included requiring water systems to sample at all taps used for human consumption, and increasing the frequency to three years, annually, or every six months. Some of these commenters stated that limited sampling is not useful as a public education tool because the samples are not representative of the entire building and could lead to a false sense of security if lead is not detected. Conversely, many commenters also stated that the EPA should not increase the required minimum number of samples of five samples per school and two per child care facility, or the sampling frequency, for reasons including that the proposed provisions are sufficient for public education purposes and increased burden on water systems may distract from other actions under the LCRI. Some commenters supported the proposed requirements stating that the purpose of the requirements is public education. Some commenters also indicated that schools and child care facilities can conduct additional sampling, if desired. The EPA also received comments stating that sampling is not necessarily effective as a public education tool due to variability in lead levels over time and suggested different requirements for the EPA to require CWSs to install filters certified to reduce lead in schools and child care facilities with periodic sampling to ensure efficacy.

In the final LCRI, the EPA is maintaining the requirements for CWSs to collect at least five samples per school and two per child care facility when sampling for lead. The EPA agrees with commenters that samples at one tap are not representative of all taps within a building but disagrees that the sampling will lead to a false sense of security. The purpose of the requirements in § 141.92 are for public education. Tap sampling is one but not the only way to provide information to schools and child care facilities about lead in their buildings. The sampling in § 141.92 serves as an initial sample set for lead risks within schools and child care facilities and coupled with the public education materials (*e.g.,* the EPA's 3Ts guidance), are intended to encourage schools and child care facilities to take additional actions, including additional comprehensive sampling. As noted in section V.L.1 of this preamble, the EPA is aware that many schools or child care facilities

lack knowledge and experience regarding lead sampling in schools and child care facilities. CWSs are required to provide schools and child care facilities with a copy of the EPA's 3Ts guidance prior to sampling. The EPA's 3Ts guidance clearly encourages schools and child care facilities to conduct comprehensive sampling as part of routine building maintenance and provides tools to assist them in these efforts. Additionally, the EPA is concerned that increasing the number of required samples and frequency of sampling will place an increased burden on water systems and divert time and resources from other requirements under the LCRI, such as LSLR. The EPA received comments from water systems noting the large number of schools and child care facilities they serve. For example, one system stated that they serve approximately 2,000 elementary schools and child care facilities and would be required to collect up to 1,000 samples per year under § 141.92 if the schools and child care facilities agree to be sampled. They noted that this sampling effort is a significant increase over what is required for compliance (*e.g.,* 400 samples per year under standard monitoring if collecting first- and fifth-liter samples at each site). The EPA notes that increasing sampling to all taps used for human consumption and/or increasing the frequency would significantly increase burden and likely make this provision unworkable. Rather, the initial sampling offered by the water system coupled with the information in the 3Ts is sufficient to educate schools and child care facilities on the steps they can take to reduce lead risks in their facilities, including steps such as routine sampling and installation of filters. The EPA does not agree that additional samples are needed to fulfill the intent of the requirements and therefore is not increasing the number of samples or sampling frequency in the final LCRI.

e. Remediation

Some commenters stated that the EPA should set a school-specific action level that would require either schools and child care facilities or CWSs to take actions based on the sampling results, asserting that otherwise, the requirements would not protect children from lead exposure. Some of these commenters highlighted existing State requirements that include action levels for schools and require remediation, citing these as support for the EPA to consider requiring similar actions. Some commenters stated that the EPA should require CWSs to install filters certified to reduce lead, such as bottle filling stations, in all schools and child care facilities, citing ''filter-first'' legislation adopted in States, such as Michigan. These commenters indicated that lead may be present in drinking water regardless of tap sample results due to variability, and that filters are necessary to protect public health. Other commenters agreed with the EPA's proposed approach for CWSs to provide schools and child care facilities with the results and remediation recommendations consistent with the EPA's 3Ts.

The EPA does not agree that § 141.92 should include an action level for use at schools and child care facilities whereby systems are required to take remediation actions if the level is exceeded. Commenters included a range of suggestions for how such a level would function, including various suggestions for levels (*e.g.,* 0.010 mg/L, 0.005 mg/L, 0.001 mg/L), who would be responsible for the remediation action (*e.g.,* the school or child care facility, the water systems), and how it would be applied (*e.g.,* to individual taps, not specified). See the discussion on the public education purpose of § 141.92 in section IV.L.2.a of this preamble for why water systems are not required to conduct remediation activities as part of these requirements. The examples of State-level requirements that include ''action levels'' to require remediation or filter-first legislation offered by commenters do not impose requirements on PWSs. These laws require schools and child care facilities to conduct sampling and/or take specific actions, such as installing and maintaining filters certified to reduce lead. These examples of State requirements are fundamentally different than the proposed requirements for the LCRI because PWSs are generally not the entities required to carry out these actions. Further, since the EPA can only regulate PWSs in NPDWRs under SDWA section 1412, the examples are not consistent with the EPA's authority. Even if the EPA did set an action level for use by schools or child care facilities in the LCRI, the EPA would not have the authority under SDWA section 1412 to require schools and child care facilities that are not regulated as PWSs to take specific actions at that level. Therefore, it would be unenforceable and likely cause confusion. Instead, the EPA is requiring CWSs to provide schools and child care facilities with the 3Ts, which includes resources to help schools and child care facilities identify potential lead sources and reduce their lead levels. The 3Ts recommends that schools and child care facilities reduce their lead levels to the lowest levels possible, recognizing there is no safe level of lead in drinking water. While not required under § 141.92, the EPA encourages schools and child care facilities to prioritize any remediation efforts based on the highest results or areas of concern (*e.g.,* older fixtures, classrooms serving younger children). However, the EPA recognizes the authority of States to impose requirements on schools and child care facilities and included a waiver provision in § 141.92(h) for States to waive requirements for CWSs when schools and/or child care facilities are otherwise sampled, including through State laws and regulations on schools and child care facilities. See the section g on waivers below for discussion on State ability to offer waivers for alternative requirements.

f. Providing Results

The EPA requested comment on if CWSs should be required to make the school sampling results publicly available. Some commenters stated that the EPA should not require CWSs to make results public stating that schools and child care facilities are responsible for communicating results. A few commenters indicated that if the public learns the sampling results from the water system rather than from the school or child care facility, that it would establish an adversarial relationship between the water system and the school or child care facility. Other commenters disagreed and stated that schools and child care facilities may not share results with staff and users of the building and their families and that CWSs should be required to disseminate results to the public. Some commenters agreed with the EPA's proposed approach for CWSs to include a statement in the CCR informing the public that sampling is available to schools and child care facilities and direct them to contact their school or child care facility for more information, while others disagreed (see section IV.O.1 of this preamble for more information on this proposed requirement).

The EPA acknowledges the concerns from commenters about whether sampled schools and child care facilities will share results and other information with occupants of the buildings and the public. The EPA did not propose for CWSs to make results public due to the additional time and resources such a requirement would impose (88 FR 84959, USEPA, 2023a). Additionally, CWSs would not likely be in the best position to answer questions from the

public, including about why a school or child care facility declined or did not opt to participate in sampling or what the school or child care facility is doing to address any lead issues in their buildings. The EPA has heard from some commenters that schools and child care facilities should communicate with the users of their buildings. While the EPA does not have the authority under SDWA section 1412 to require schools and child care facilities that are not PWSs to take this action, the EPA strongly encourages them to share results and other relevant information as outlined in the 3Ts guidance. The EPA expects that many schools and child care facilities have experience with sharing such information (88 FR 84959, USEPA, 2023a). However, to increase public transparency, the EPA proposed and is finalizing a requirement for CWSs to include a statement in the CCR about school and child care facility lead sampling and direct members of the public to their local school or child care facility for information. The EPA received many comments supporting the proposed provision. The EPA intends for this requirement to help raise awareness among the general public and to incentivize schools and child care facilities to be proactive about sharing information. See section IV.O.1 of this preamble for further discussion of the final CCR requirement.

The EPA is also requiring in the final rule for CWSs to submit any sampling results to the State and to State and local health agencies within 30 days, but as soon as practicable, after CWSs receive the results. The EPA reduced the time from annually under the 2021 LCRR to within 30 days in the final LCRI such that the State, and State and local health agencies would know about sampling results in a timely manner, especially if the school or child care facility does not share the results. These State and local agencies can use this information to determine if they should take additional steps such as working with schools and child care facilities to address lead in their buildings or establishing requirements such as those as discussed below. The EPA notes that States may voluntarily choose to disseminate sampling results to the public (*e.g.,* posting on a website).

g. Waivers

The EPA received many comments detailing existing State requirements for school and/or child care facility sampling and requested that the EPA allow States to waive the sampling requirements for water systems. Many commenters stated that the EPA should provide flexibility for States to issue waivers for recent or ongoing alternative programs. Some commenters also requested clarification on conditions for waivers and when they can be obtained. The EPA requested comment on two new waiver provisions in the proposed LCRI. The EPA received comments on whether the EPA should allow States to waive the sampling requirements of § 141.92 in schools and child care facilities that had been sampled between January 1, 2021 and the LCRI compliance date for the first five-year sampling cycle after the compliance date. Many commenters supported this provision but stated that the EPA should extend this date to as early as January 1, 2014, citing the new lead-free standards and stating that sampling conducted over this time period should ''count'' towards compliance with the LCRI.

The EPA also requested comment on the agency's proposal to allow States to waive the sampling requirements of § 141.92 in schools and child care facilities that install and maintain filters on all outlets used for cooking and drinking. Additionally, the EPA requested comment on whether this should only be allowed if the schools and child care facilities are required by State or local law to install and maintain them. Some commenters did not support limiting the waivers based on State or local law stating that the provision should be flexible to maximize the number of eligible CWSs. Other commenters did not support the requirement as proposed, with some noting that it would be difficult for a water system to know which schools and child care facilities maintain filters. Some States indicated they would not offer waivers for schools and child care facilities that use filters without an existing requirement, stating sampling or other maintenance requirements are necessary to determine efficacy.

The EPA is aware that some States have requirements for lead sampling in schools and child care facilities (see the final LCRI Economic Analysis (USEPA, 2024a, chapter 3, section 3.3.10.2.1)). Many of these regulations require recurring sampling of all outlets used for cooking and drinking and may require remediation actions (*e.g.,* Minnesota Statutes 2023, section 121A.335; New Jersey Administrative Code [N.J.A.C.], section 6A:26–12.4; 10 New York Codes, Rules and Regulations [NYCRR] Subpart 67–4; State of Vermont, 2019). The majority of these existing laws impose requirements directly on schools and child care facilities, and do not involve PWSs. The EPA included waiver provisions in the LCRR recognizing that it would be duplicative to require CWSs to conduct public education and sampling in schools and child care facilities that are already being sampled under an alternative program. The EPA also included provisions for waivers to cover schools and child care facilities sampled under voluntary programs, including those funded under SDWA section 1464(d). The EPA also emphasizes that the alternative voluntary programs are not required to involve the water system or be administered by the State drinking water program for the State to issue a waiver. For example, in some States, the Department of Education may administer voluntary sampling efforts using a grant awarded under SDWA section 1464(d).

The EPA notes several commenters cited various State requirements and asked the agency if they would qualify for a waiver. Other commenters requested flexibility to offer waivers even if the sampling was not conducted in alignment with the requirements of § 141.92. The EPA has included criteria in § 141.92(h) for States to determine if the alternative program is at least as stringent as the sampling requirements in § 141.92. Although commenters' requests that the agency evaluate whether any programs would qualify for a waiver under the final LCRI, the final rule leaves this to the State and includes flexibilities in sample frequency, number, and protocol provided the overall program is at least as stringent as the requirements in LCRI. For example, a State requirement for all schools to be sampled once every six years but all outlets used for cooking and drinking are sampled and some remediation is required could be eligible for a waiver. Similarly, a program using a different sampling protocol may qualify for a waiver if outlets are sampled and remediation is required. The EPA also clarified that waivers can apply to groups of schools and licensed child care facilities (*e.g.,* all public elementary schools), may not exceed the time period covered by the sampling conducted under an alternative program, and automatically expire at the end of any 12-month period during which sampling is not conducted. Once a school or child care facility is no longer covered under a waiver, the CWS must fulfill the sampling requirements of § 141.92 at that site. Additionally, States can issue waivers at any time given that laws or programs may be established after the LCRI compliance date.

As described above, many commenters requested that the EPA require actions such as requiring all

schools and child care facilities to participate in sampling (*i.e.,* mandatory sampling), require remediation actions, and filter installation. As discussed in section V.L.1 of this preamble, the EPA does not have the authority under SDWA to require schools and child care facilities that are not regulated as PWSs to take these actions. However, there are many examples of States under State law that have successfully adopted such requirements (see the final LCRI Economic Analysis (USEPA, 2024a, chapter 3, section 3.3.10.2). Other Federal agencies may also issue requirements under their statutory authorities. In 2019, 14 Federal and non-Federal partners signed a Memorandum of Understanding (MOU) on Reducing Lead Levels in Schools and Child Care Facilities to voluntarily support and encourage schools and child care facilities to conduct sampling, remediation, and communication activities to reduce lead risks in their facilities (USEPA, 2019b). The signatories to the MOU agreed to encourage schools and child care facilities to take actions to address lead in their facilities, which could include regulations promulgated under their respective legal authorities or other non-regulatory initiatives like public education and outreach and technical assistance. Notably, on August 21, 2024, the Administration for Children and Families within the U.S. Department of Health and Human Services (HHS) issued a final rule ''Supporting the Head Start Workforce and Consistent Quality Programming,'' which requires Head Start programs in facilities where lead may exist to develop a plan to prevent children from being exposed to lead in water, including sampling and inspection at least every two years, and remediation as needed (89 FR 67720, USHHS, 2024). Additionally, on March 24, 2023, the EPA and the HHS issued a joint letter to governors, encouraging State and local governments to use Federal funding to address lead in schools and child care facilities. Specifically, the letter encourages governments to ''establish or strengthen child care licensing and monitoring requirements to test for and address lead in early childhood settings along with funding to support the associated costs'' and promote the use of the EPA's 3Ts guidance (USEPA and USHHS, 2023). The EPA strongly encourages States to adopt lead testing requirements for schools and child care facilities, using a variety of means, including incorporating requirements in State and local licensing of schools and child care facilities. States are likely better positioned than the EPA to administer lead testing and remediation programs because States can establish regulations for schools and child care facilities that would provide for greater consistency of education, testing, remediation activities, and public communication across all schools and child care facilities throughout a State. Additionally, States can directly apply for and have access to funding to support schools and child care facilities that may not be available to CWSs. If a State chooses to adopt requirements for schools and child care facilities, the State may waive the sampling requirements of § 141.92 for CWSs in the schools and licensed child care facilities covered by the alternative requirements. In the final rule, the EPA has provided a range of criteria for waivers such that States have the flexibility to establish alternative programs (§ 141.92(h)).

The EPA proposed allowing States to waive water systems from the sampling requirements in § 141.92 for the first five years after the LCRI compliance date in schools and child care facilities that had been sampled between January 1, 2021 and the LCRI compliance date. As proposed in LCRI, CWSs would be required to sample at the request of any school or child care facility they serve after the first five-year cycle (*i.e.,* starting five years after the rule compliance date) unless the State grants a waiver for an ongoing alternative program. The EPA notes general support for this concept and is finalizing the requirement. The EPA disagrees with extending the cut-off date to as early as January 1, 2014. The EPA proposed to limit the cut-off date to January 1, 2021. While the EPA recognizes that some schools and child care facilities may have been sampled under a one-time requirement or voluntary program as early as 2014, extending the cut-off date would result in an extended time period in which a school or child care facility would not be eligible for sampling under the LCRI. For example, if a school that had been last sampled in 2014 was covered by a waiver for the first five-year sampling period, the school would not receive an offer for sampling from the CWS until six years after the LCRI compliance date, or almost 15 years from when they were last sampled. In contrast, schools and licensed child care facilities have the opportunity to be sampled at least once every five years by their CWS under the LCRI. Additionally, the EPA proposed a cutoff date prior to the LCRI compliance date in response to concerns that many schools and child care facilities are currently being tested for lead under existing State or local requirements and through WIIN grant funded efforts and should be allowed to ''count.'' Specifically, such a provision is intended to ensure that the final LCRI will not incentivize the delay of any voluntary school or child care facility lead sampling efforts in order to align with the LCRI compliance dates. The EPA encourages States to use available Federal funding, including WIIN grants, to conduct sampling in school and child care facilities as soon as practicable. Federally funded efforts could reduce the burden on CWSs, particularly during the first five-year cycle after the LCRI compliance date. Additionally, many schools and child care facilities were closed in 2020 due to the COVID–19-related shutdowns. The agency estimates that any data collected during 2020 COVID–19-related closures would be unrepresentative due to low water usage and longer than normal stagnation times. Based on the reasons described above, the EPA is not extending the January 1, 2021, cut-off date in the final rule. The EPA notes that CWSs are not required to sample if a school or child care facility declines or does not respond to the offer to sample. Schools or child care facilities that have previously been sampled and may have taken steps to address lead in their buildings may likely not respond to the offer for sampling.

The EPA is finalizing the provision allowing States to waive the sampling requirements of § 141.92 for CWSs in schools and child care facilities that install or maintain filters certified to reduce lead on all outlets used for cooking and drinking as proposed. The EPA proposed this requirement to account for regulatory and voluntary efforts to install filters certified to reduce lead in schools and child care facilities. The EPA is aware that some States have specific requirements including requirements to periodically sample or maintain filters, or for schools to only install filters if results are above a certain threshold (*e.g.,* 0.005 mg/L). The EPA requested comment on whether waivers should only be issued if there is a State or local requirement for installation and maintenance but decided to finalize the provision as proposed to maximize flexibility. The EPA acknowledges the implementation concerns raised by commenters, including that States or water systems may not be aware of which schools or child care facilities may be utilizing filters. However, the waiver will apply where the water system is aware of such school and child care facilities and will

encourage voluntary and proactive actions to reduce lead in drinking water. The EPA expects that water systems will work with their States if they are aware of schools and child care facilities that have taken actions to install and maintain these devices. States may also choose to issue waivers if the State has enacted ''filter-first'' legislation, which require filters to be installed and maintained.

3. Final Rule Requirements

a. Applicability

For the final LCRI, the EPA is requiring all CWSs to conduct public education and lead sampling in all schools and licensed child care facilities they serve (§ 141.92). The EPA is finalizing the proposed revisions clarifying the exclusion for schools and licensed child care facilities that were constructed or had full plumbing replacement after January 1, 2014 or the date the State adopted standards that meet the definition of lead free in accordance with section 1417 of SDWA, whichever is earlier and is renumbering this provision from § 141.92(a)(1) to § 141.92(a)(1)(i). The EPA is adding a revision in the final LCRI to specify that the excluded schools and licensed child care facilities must not be served by a lead, GRR, or unknown service line as a new clause in § 141.92(a)(1)(ii). The EPA is finalizing the revisions specifying that these requirements do not apply to NTNCWSs, including schools and child care facilities that are regulated as PWSs (§ 141.92(a)(2)). The EPA is also finalizing the proposed reorganization of § 141.92 that clarifies the requirements of this section compared to the 2021 LCRR and more clearly states the requirements in plain language.

All CWSs are required to develop a list of all elementary and secondary schools and licensed child care facilities they serve. The EPA is adding a revision in the final LCRI to clarify in § 141.92(b)(1) that schools and licensed child care facilities that are excluded under § 141.92(a) are not required to be included on the list. The EPA is finalizing the proposed requirement for CWSs to submit the initial list to the State by the LCRI compliance date in accordance with § 141.92(b). CWSs are not required to include schools and child care facilities on the list that do not meet the applicability requirements in § 141.92(a), such as a school constructed after January 1, 2014. CWSs must update the list at least once every five years following the LCRI compliance date and submit it to the State or certify that no changes have been made to the list in accordance with § 141.92(b)(2).

b. Outreach to Schools and Licensed Child Care Facilities

All CWSs must conduct public education about the health risks of lead in drinking water to all elementary schools, secondary schools, and child care facilities on their list in accordance with § 141.92(c) at least annually. The EPA is adding a revision in the final LCRI to clarify that the information on the health risks in drinking water must be consistent with the content requirements of § 141.85(a)(1)(ii) through (iv) and (vi). Within the first five years following the LCRI compliance date, CWSs must notify the elementary schools and licensed child care facilities they serve that they are eligible for lead sampling (§ 141.92(c)(2)(i)). The notice must include a proposed schedule for the water system to conduct the sampling and a copy of the EPA's 3Ts guidance. CWSs must provide this notice to at least 20 percent of the elementary schools and child care facilities they serve per year such that each elementary school and child care facility on the list receives the outreach during the first five-year sampling cycle after the rule compliance date (§ 141.92(d)(1)). Additionally, CWSs must notify all secondary schools annually that they may request lead sampling from the water system (§ 141.92(c)(2)(ii)). Starting in the sixth year following the rule compliance date, all CWSs must annually notify all the elementary schools, secondary schools, and licensed child care facilities they serve that the water system will sample at the request of the school or child care facility (§ 141.92(c)(3)).

c. Sampling Frequency

The EPA is retaining requirements from proposal for water systems to conduct sampling in 20 percent of the elementary schools and 20 percent of the licensed child care facilities they serve per year for the first five years after the rule compliance date until all facilities are sampled or are considered non-responsive (§ 141.92(d)(1)). If an elementary school or licensed child care facility either declines the offer for sampling or is non-responsive after at least two outreach attempts, the CWS may count the facility under the 20 percent for that year (§ 141.92(d)(1)(i)). However, the CWS must include information about the schools and child care facilities that either did not respond or declined sampling in a report submitted to the State as described in § 141.90(i)(3) (see section IV.N of this preamble). Starting in the sixth year following the compliance date, CWSs must sample any elementary school or licensed child care facility that requests sampling. Starting with the rule compliance date, CWSs must sample any secondary school if requested (§ 141.92(e)). When conducting sampling on request, CWSs are not required to sample more than 20 percent of the schools or licensed child care facilities they serve per year and may defer requests above 20 percent to the next year (§ 141.92(d)(2)(i) and (e)(2)). A CWS is not required to sample an eligible school or child care facility more than once in a five-year period. If a school or child care facility is added to the list in § 141.92(b), the CWS must conduct the outreach in § 141.92(c)(1) such that all elementary schools and child care facilities receive one round of proactive outreach from the water system prior to only being offered sampling on request (§ 141.92(d)(3)).

d. Sampling

The EPA is retaining the proposed sampling protocol requirements in the final LCRI in § 141.92(f). When conducting sampling, CWSs must collect at least five samples per school and two samples per child care facility in accordance with § 141.92(f)(1). If there are not enough taps available to meet the required minimum number of samples, CWSs must collect a sample from all the taps used to provide water for human consumption. Samples may be collected from outlets with point-of-use devices only if there are point-of-use devices on all outlets typically used to provide water for human consumption. Samples must be collected according to the protocol in § 141.92(f)(2). Samples may be collected by the CWS, the school or child care facility staff, or another appropriately trained individual (§ 141.92(f)(3)).

e. Providing Sample Results

The EPA is finalizing the proposed requirements in § 141.92(g)(1) for water systems to provide results to the sampled school or child care facility, the State and local health agencies and the State as soon as practicable but within 30 days of receiving the results. See section IV.N of this preamble for school and child care facility reporting and section IV.O.1 for requirements for CWSs to include information about school and child care facility sampling opportunities in the Consumer Confidence Report. The EPA is retaining the requirements for water systems to provide information about remediation (*e.g.,* the EPA's 3Ts or other related materials) to the sampled schools and

child care facilities along with sample results in § 141.92(g)(1)(i)).

f. Waivers

The EPA is finalizing the proposed provision in § 141.92(h)(5) allowing States to waive the sampling requirements for water systems in § 141.92 for the first five years following the final LCRI compliance date for any schools or child care facilities that were sampled between January 1, 2021 and the LCRI compliance date that meet the requirements of this section. CWSs must conduct the sampling requirements of § 141.92 for all other eligible schools and licensed child care facilities. Additionally, CWSs must conduct the sampling requirements in all the schools and licensed child care facilities on the list in § 141.92(b) starting in the sixth year after the LCRI compliance date, unless those facilities are covered by a different waiver under § 141.92(h).

The EPA is also finalizing the proposed provision allowing States to waive the sampling requirements for water systems in § 141.92 for any schools or licensed child care facilities that install and maintain filters certified to reduce lead (§ 141.92(h)(1)(iv)). The EPA is retaining the other waiver provisions introduced in the 2021 LCRR and proposed for LCRI including allowing States to waive sampling requirements for water systems to sample in schools and child care facilities that are covered by alternative testing programs that are at least as stringent as the sampling requirements in § 141.92 as provided in § 141.92(h). CWSs are required to fulfill all the requirements of § 141.92 in the subset of schools and licensed child care facilities they serve that are not covered by a waiver or once a waiver no longer applies (§ 141.92(h)(2) and (3)).

M. Copper

1. Rationale and Proposed LCRI Requirements

Copper is an essential trace element required for several metabolic processes; however, excess copper intake is toxic and linked to various adverse health effects. Acute gastrointestinal conditions are the most common adverse health effects observed among adults and children. Chronic exposure to copper is particularly a concern for people with Wilson's disease, an autosomal recessive genetic disorder of copper metabolism affecting 1 in 30,000 individuals (Ala et al., 2007). These individuals are prone to copper accumulation in body tissue, which can lead to liver damage, neurological, and psychiatric symptoms (Dorsey and Ingerman, 2004). Additional information on the health effects associated with copper are available in appendix E of the final LCRI Economic Analysis (USEPA, 2024a).

Under the LCRI, the EPA proposed to require water systems to provide customer notice of an individual's copper tap sampling results. Similar to the notice for lead tap sampling results, the notice for copper tap sampling results must include the results of copper tap water monitoring for the tap that was tested, an explanations of the health effects of copper as provided in appendix B to subpart Q of part 141 (Standard Health Effects Language for Public Notification), a list of steps consumers can take to reduce exposure to copper in drinking water, and contact information for the water system. The EPA proposed that systems must provide all consumer notices of individual copper tap sampling results as soon as practicable but no later than three calendar days after the water system learns of the tap monitoring result and any notifications conducted by mail must be postmarked within three days. The EPA proposed the notice must also provide the MCLG and action level for copper, both of which are 1.3 mg/L and the definitions for these two terms from § 141.153(c). The EPA proposed to allow systems to combine the lead and copper results and required information into a single notice in cases where copper and lead samples are collected at the same time. This would also include notification of results from on-request tap sampling required under § 141.85(c).

2. Summary of Comments and the EPA's Response

The EPA received several comments on the proposed LCRI about the regulation of copper. The EPA received comments focused on creating separate sampling requirements for lead and copper. Commenters requested that water systems collect copper and lead samples from different locations, with copper samples focusing on locations with expected high concentrations of copper (*i.e.,* sites with newly installed copper service lines). Commenters noted the proposed LCRI targets sites most likely to have elevated lead levels and not necessarily sites that may have elevated copper levels.

The EPA disagrees with creating separate sampling pools for lead and copper. The sample site selection criteria at § 141.86(a)(4) require sampling from sites with the highest risk (lead) followed by sites that have copper pipes (Tier 4 sites). Tier 5 includes sites that are representative of sites throughout the distribution system that can include sites served by copper pipes. Commenters also noted the challenges with recruiting volunteers to collect tap samples, which would further be exacerbated by requiring additional separate sites for copper. In addition, maintaining two sample pools, one for lead and one for copper, would further complicate the rule. Recognizing the inherent complexity of the tap sampling requirements for the LCR, the agency did not develop a separate tiering structure for copper sites to ease implementation.

Moreover, because the sources of lead and copper in drinking water are generally the same (*i.e.,* corrosion from fixtures of pipes containing the metal), and because the treatment technology for elevated copper levels is also the primary treatment for lead (*i.e.,* reducing corrosion in the distribution system), it is rational to group these two contaminants into a single rule (56 FR 26490, USEPA 1991). Additionally, both lead and copper require sampling at taps, rather than at the entry point of the distribution. While the EPA did not propose many revisions to address copper, the rule revisions will also reduce copper levels. Treatments to control for lead are also effective at controlling for copper, such as pH and alkalinity adjustment and orthophosphate inhibitors. For example, installing and re-optimizing OCCT for systems above the lead action level will likely reduce copper levels. Although the tiering structure for the final LCRI has not changed with regard to copper, Tier 4 includes sites with copper lines; thus sampling will occur at higher-risk copper sites when the higher risk lead sites are no longer available.

Additional comments on copper included encouraging the EPA to reassess public education requirements for copper. These comments requested the EPA require water systems to inform their users when a system exceeds the copper action level, in a manner similar to how water systems are required to inform their users when a system exceeds the lead action level. The EPA disagrees with requiring water systems to inform their users of a copper ALE. The LCRI requires water systems to issue Tier 2 Public Notification if the system has a treatment technique violation in response to a copper ALE. In addition, a water system must report copper tap sampling compliance information in its CCR under § 141.153(d), along with the new requirement for water systems to provide notification to consumers of their individual copper tap sampling results under § 141.85(d). The EPA

expects that elevated copper levels may be addressed by CCT, in addition to systems' providing the appropriate health effects language to consumers through public notification or the CCR, thus protecting individuals at most risk of adverse health effects due to copper exposure (*i.e.,* those with Wilson's Disease). Additionally, the health impacts of acute copper exposure versus acute lead exposure are vastly different. Exposure to lead poses serious health risks to the brain and nervous system of children, while copper exposure causes gastrointestinal distress for a majority of the population, except for those with Wilson's Disease who should be aware of all potential exposure sources of copper. Therefore, the EPA finds it is reasonable to rely on these requirements for public health protection from copper for purposes of the treatment technique for public education in lieu of adding others, as requested by commenters.

3. Final Rule Requirements

The final LCRI retains the proposed changes to copper including the timing of the notification for an individual's copper tap sampling result. Water systems must provide notification of the tap sampling result as soon as practicable but no later than three business days and any notifications by mail must be postmarked within three business days of the system's learning of the tap sampling results as stated in § 141.85(d)(2). In cases where copper samples are collected at the same time as lead, systems are permitted to combine lead and copper results and required information into a single notice. The EPA expects that this will simplify the implementation of the rule by allowing systems to deliver both the lead and copper results and associated required information at the same time.

N. System Reporting and Recordkeeping

1. System Reporting Requirements

a. Rationale and Proposed LCRI Revisions

The EPA proposed in the LCRI to revise water system reporting requirements in accordance with other proposed changes to the LCRI (§ 141.90). The proposed revisions to these sections were primarily driven by the changes and additions to the corresponding requirements in other sections of the proposed LCRI to ensure consistency and completeness of reporting requirements. Revisions proposed in other parts of the rule affect reporting of tap sampling results for LSL sites, documentation requirements for customer refusals, reporting requirements for systems with multiple lead action level exceedances, compliance with the service line inventory and replacement requirements, and reporting requirements for systems with schools and child care facilities. System reporting requirements should match the LCRI requirements to inform State decision-making and improve implementation and oversight.

The EPA proposed modifying the tap sampling reporting requirements for systems sampling at LSL sites to report both first- and fifth-liter sample results in accordance with the updated tap sampling protocol.

In the 2021 LCRR, systems are required to report summary numbers of lead, GRR, and unknown service lines when they submit their service line material inventory. The LCRI proposal expanded the inventory reporting requirements to include lead connectors and non-lead service lines, beginning with the baseline inventory due by the LCRI compliance date.

Under the 2021 LCRR, systems with LSLs are required to begin conducting standard tap monitoring within one year of the rule compliance date, and submit a site sample plan to the State for review prior to the start of the first tap monitoring period. In LCRI, the EPA proposed to expand this requirement to start standard monitoring to all systems with lead, GRR, and/or unknown service lines.

The EPA proposed to require that all systems conducting service line replacement report their compliance with the service line inventory and replacement requirements to the State. Each year, systems would be required to submit inventory summary information, including the current number of LSLs, GRR service lines, unknown service lines, non-lead service lines, and lead connectors. They would also be required to report information on their replacement program, including the total number and street addresses of locations where full, partial, and GRR service lines and lead connectors were replaced. The EPA also proposed that systems report the total number of unknown service lines determined to be non-lead and the street address of any service line inventoried as non-lead that is later discovered to be a lead or GRR service line. Under the LCRI proposal, systems would be required to certify to the State the number of service lines not replaced due to property owners not providing consent to conduct service line replacement.

As part of the reporting requirements, systems must certify that various requirements have been completed. The EPA proposed two required certifications for systems conducting public education and making filters available following multiple lead action level exceedances. First, they must certify to the State that they conducted at least one required outreach activity in the previous year. Second, they must certify that they complied with filter availability requirements in the previous year by providing a copy of the filter distribution plan and the number of filters provided each tap sampling period.

The EPA proposed improvements to the reporting requirements for water systems with schools or child care facilities. The EPA proposed to require systems to submit the initial list of schools and child care facilities they serve by the rule compliance date. The EPA also proposed to require systems provide the results of school and child care sampling to the State within 30 days of receiving them (see section IV.L of this preamble). The 2021 LCRR requires water systems to submit a summary report to the State containing information about school and child care sampling during the prior calendar year, including the number of schools and child care facilities sampled and the number of elementary schools and child care facilities that declined or did not respond to attempts for sampling. The EPA proposed in the LCRI that the report must also include the names of the schools and child care facilities. The EPA anticipated that this would help States identify which schools and child care facilities have not been sampled and why.

b. Summary of Comments and the EPA's Response

The EPA received comments stating there were too many system reporting requirements and recommended the EPA remove requirements or decrease the number of requirements. These commenters stated that multiple and different types of reporting requirements are too burdensome both on the systems that must complete the reporting requirements and on the States that must review them.

In response to these comments, the EPA reviewed all system reporting requirements for the LCRI. The EPA disagrees with these commenters because the agency determined that each of the reporting requirements in the proposal provide information that is essential to public health protection or the implementation of the rule. The EPA acknowledges that there are several reporting requirements associated with this rule. However, the LCRI is a complex rule with multiple components that requires adequate system reporting

to provide the necessary data for public health protection and effective oversight and enforcement.

The EPA received comments stating that there were too many dates throughout the year when systems would be required to report information to the State. Reporting requirements in the proposed LCRI included reporting sampling results, service line inventory information and certifications that required actions had been taken by systems. To reduce complexity and administrative burden, some of these commenters suggested the final rule should align the frequency of some of the certifications to streamline the reporting requirements. The EPA agrees with these commenters that a more streamlined set of reporting dates would help ease confusion and reduce burden for systems and States. For the final LCRI the EPA has limited the total number of dates throughout the year when reporting will be required by aligning the reporting schedules to the greatest extent possible. Specifically, the EPA adjusted the reporting deadlines in § 141.90(a)(1)(ii), (a)(3)(i), (e)(3) through (10) and (13), and (f)(3), (6) through (8), and (10). The majority of the reporting elements are now required on either the date three years after the compliance date, 10 days after the tap sampling period, or annually by January 30. Other reporting elements retain different reporting dates due to the specific nature of those reporting requirements.

The items that must be reported on the date three years after the compliance date are generally items that are associated with the service line inventory. Examples of this are the initial inventory and documentation of previous inventory validation efforts that have been completed by the system prior to the LCRI. These items are necessary at the compliance date because they provide information that systems will need to comply with the LCRI.

The items that must be reported 10 days after the tap sampling period are generally associated with tap sample results from that tap sampling period. These results provide information vital to understanding public health risk, such as concentrations of lead and copper in drinking water at consumers' taps. The reporting results can also lead to system requirements for taking action to protect public health triggered by the 90th percentile lead and copper values, such as follow up sampling and public education. Since this information may lead to actions by systems or individuals to protect public health, these items must be reported relatively quickly.

The items that must be reported annually by January 30 are generally related to the LSL replacement program, the service line inventory, public education summaries, or other certifications provided by systems that they are meeting the various requirements of the LCRI. These items are less time sensitive and therefore can be reported on an annual basis. The date of January 30 was selected because many reporting items in the proposal and the 2021 LCRR would already occur on this date. The emphasis of January 30 meant that for the final LCRI, the EPA changed some reporting items, mostly certifications associated with public education and outreach, from a July 1 date to January 30. The EPA maintained the annual frequency for these items because the EPA did not receive comments stating that the frequency was inappropriate. However, the EPA aligned the reporting dates to respond to comments that suggested that a more streamlined approach would reduce confusion and burden for systems and States.

In addition, the EPA modified the regulatory language describing the January 30 date in some instances for clarity and consistency, without changing the reporting date. For example, the proposal used terms such as ''30 days after the end of the calendar year'' or ''30 days after the end of the program year'' to describe January 30. This could result in confusion about the actual reporting deadline, when the EPA intends for all applicable reporting requirements to be met annually by January 30. Hence, for the final LCRI, the EPA amended language in § 141.90 of the rule to consistently say ''annually by January 30.''

The EPA also adjusted reporting requirements to match the change from proposal in the designation of the program year. The agency made this change to reduce implementation burden. For the final LCRI, the EPA added the definition for program year to §§ 141.90(e) and 141.84(d)(5)(iii) to clarify that the first mandatory service line replacement ''program year'' is from the compliance date specified in § 141.80(a)(3) to the end of the next calendar year and that every subsequent program year is aligned with the calendar year. This means that the first program year will be slightly longer than one calendar year and subsequent program years will be one calendar year long. All program years, including the first program year, will end on December 31. The reporting deadlines for many items in the proposal were dates stated in relation to the program year (*e.g.,* ''no later than 30 days after the end of each program year''). The EPA changed many of these deadlines to cite specific days throughout the year (*e.g.,* ''annually by January 30'') for clarity. While the language describing the date has changed, these systems still have the same amount of time for reporting since they are still 30 days after the program year. The revised language and the alignment of program year to calendar year responds to comments that a more streamlined approach will reduce confusion and burden.

Finally, there are some reporting requirements that have different reporting dates. These types of requirements generally fall into two categories. This first category is items that require fast action, often sooner than 10 days, due to an interest in public health protection, such as certification that public education materials were delivered appropriately after a lead action level exceedance. Public health is protected by quick reporting because the reporting can result in action taken by the system or the public to protect from the risk of lead or copper contamination in their drinking water. The second category is an item that is relatively uncommon but will lead to a major change in the system's requirements under the rule, such as the discovery of an LSL in a system that was previously thought to be free of LSLs. In these cases, the system will often need to take action to modify their operations and it would not be appropriate to wait for up to a year to begin. These specific circumstances are not appropriate for the agency to make changes in the final LCRI to align these requirements with the other more common ones previously discussed.

The EPA received comments concerning the requirement to report tap sampling results within 10 days of the end of the tap sampling period, which is the period when systems must collect samples within the tap monitoring period. Some commenters felt that it would not be possible to meet this deadline, and instead this reporting should be tied to the tap monitoring period. These commenters reasoned that for samples taken near the end of the tap sampling period, there is not sufficient time for systems to send them to a laboratory, receive the results, perform the 90th percentile calculations, and report to the State all within ten days. The EPA disagrees with these commenters because there is a high public health value of having systems report results to States within 10 days of the tap sampling period. This is because high levels of lead or copper, as

indicated by tap sample results, require quick action by water systems to protect public health. These actions include conducting public education so consumers can take informed actions to protect their health and reducing exposure to these contaminants through CCT. In addition, ensuring the State receives the 90th percentile data within 10 days will allow the State to provide oversight should actions need to be taken to protect public health. The EPA also notes water systems have flexibility as to when tap sampling occurs within the tap sampling period. Systems do not need to wait to the last day of the tap sampling period if the system is concerned about receiving laboratory results in time to calculate the 90th percentile and provide results to the State within 10 days. Therefore, the EPA determined 10 days is an appropriate timeframe.

The EPA received several suggestions for minor technical changes to the reporting requirements in the areas of system reporting, mainly for consistency with other sections of the rule, clarity, and understandability of the regulatory text. The EPA agrees that consistency, clarity and understandability are important goals for the LCRI. Therefore, the EPA agrees with advancing these goals and adjusted the LCRI accordingly. In general, these changes did not substantially impact the requirements of the rule.

For example, the EPA received comments noting that in many locations in § 141.90, some language was used inconsistently. In the proposal, words like ''certify,'' ''document,'' and ''demonstrate'' were used interchangeably. The EPA agrees that terminology should be used consistently to ease implementation of the LCRI. Therefore, for the final LCRI, the EPA revised § 141.90 to consistently use ''certify'' to document whether a system has completed a rule requirement when data or other details are not required. This revision occurs at § 141.90(a)(2)(iii) and (f)(4) and (7). Conversely, in § 141.90(e)(10), the EPA changed the language from ''certify'' to ''submit'' to reflect that the reporting requirement is the number of service lines, not simply to notify the State that the requirement has been met.

In the proposal language in § 141.90(a)(2)(iii), commenters noted that the requirement for systems to document that the results of monitoring will be made publicly available was presented in a way that could be perceived to require documentation of an action that would happen in the future and that this would be difficult to document and enforce. The EPA agrees with these comments that the way this requirement was worded would be challenging for systems to implement. Therefore, the EPA has revised the final requirement to be a certification of an action that has occurred in the previous tap monitoring period.

c. Final Rule Requirements

The final LCRI contains minor textual revisions to enhance the clarity of § 141.90 and to ensure that all the reporting requirements are consistent with other provisions of the rule. The EPA also streamlined many of the reporting requirements of the rule.

For the final LCRI, the EPA revised the reporting requirements for tap monitoring for lead and copper and for distribution system and entry point monitoring for water quality parameters to provide clarifications and update references. The EPA also made changes to clarify that the tap sampling protocol must meet the requirements of § 141.86(b) and to clarify that if a system modifies its protocol, it must be submitted to the State prior to the next tap sampling period (§ 141.90(a)(1)(ii)).

The EPA revised § 141.90(a)(2)(iii) to require the system to certify that they made the results from the preceding tap monitoring period publicly available. The proposed LCRI required the system to certify they would make the results public in the future, which would have been difficult to enforce. The EPA also revised this section to be consistent with the rest of the LCRI by replacing the word ''documentation'' with ''certification.''

For the final LCRI, the EPA added a provision (§ 141.90(a)(2)(viii)) to require systems to report the number of sites with non-responsive customers or customer refusals during the tap sampling. The agency is adding this clarification to be consistent with requirements in § 141.86(a)(4).

The final LCRI added a requirement for systems qualifying under § 141.86(b)(3) to submit updated documentation when there are changes to standing times and/or locations for substitute compliance tap samples (§ 141.90(a)(3)(i)). The agency is adding this clarification to be consistent with other requirements in § 141.86(b)(3).

In the proposal, § 141.90(a)(4) contained language that described system and State requirements when implementing a new source or a long-term treatment change. The EPA determined this language is substantive language about system and State requirements beyond reporting. Therefore, the EPA added this language to § 141.81(h), because § 141.81 contains requirements concerning corrosion control treatment requirements, which are most closely related to requirements concerning implementing a new source or a long-term treatment change. The EPA has also retained identical language in § 141.90(a)(4) to reflect the importance of the requirement and to emphasize both the substantive and reporting aspects of the requirement.

The EPA added language to § 141.90(c)(5), which applies to systems that choose to defer OCCT because they can complete service line replacement in five years or less at a minimum annual rate, as described in § 141.81(f). The language in the proposal stated that these systems must certify that they have completed their mandatory service line replacement program. The EPA added language to clarify that the system may also certify that they have met the minimum annual replacement rate calculated under § 141.81(f)(1)(ii). The agency added this text for clarity and it does not change the requirements of this section from the proposal.

For the final LCRI, the EPA added a description of ''program year'' to the service line inventory and replacement reporting requirements (§ 141.90(e)) to provide clarity and ease implementation. This description is also provided under the service line replacement requirements (§ 141.84(d)(5)(iii)). The EPA is adding this description for clarity and ease of implementation.

The final LCRI requires systems to submit a baseline inventory that includes a summary of the total numbers of each of the following (§ 141.90(e)(2)): lead, GRR, unknown, and non-lead service lines, lead connectors, and connectors of unknown material. The EPA is adding this clarification to be consistent with other requirements in § 141.84(a)(2) through (4).

For the final LCRI, the EPA added a requirement (§ 141.90(e)(3)(ii)) for systems to certify annually that there have been no changes to their service line replacement program, or if there have been changes, they must submit a revised service line replacement plan. This requirement is necessary to give States appropriate awareness and oversight on any potential changes to the plan. This reporting requirement is consistent with the new requirement in the LCRI for systems to annually update their replacement plan (§ 141.84(c)). For more information on this requirement, see section IV.C of this preamble.

For the final LCRI, the EPA added a provision (§ 141.90(e)(3)(iii)) that requires systems eligible for the deferred deadline provisions for LSLR to report

updated service line replacement plan information to the State at intervals described in § 141.84(d)(5)(vi) (see section IV.C of this preamble). The EPA added this language to be consistent with the requirements in § 141.84(d)(5)(vi).

The LCRI proposal required systems to submit the updated LSL inventory to the State. The EPA added clarifying language to § 141.90(e)(4) stating that a water system may provide instructions to the State on how to access the updated LSL inventory online instead of submitting the entire inventory to the State. The EPA expects this will help reduce the administrative burden associated with this requirement on systems and States.

The EPA included a new requirement at § 141.90(e)(8)(i) for systems to report the number of connectors of unknown material as part of their inventory. The EPA added this language to be consistent with requirements in §§ 141.84(b)(2)(iv) and 142.15(c)(4)(iii)(D). For more information about the documenting connectors of unknown material in the inventory, please see section IV.D.1 of this preamble.

The EPA included a requirement in the final LCRI in § 141.90(e)(9) for systems to submit to the State the specific version (including the date) of the service line inventory used to determine the number of non-lead service lines used when the number of non-lead service lines in the validation pool was determined. The EPA included this requirement to be consistent with requirements found in § 141.84(b)(5)(v). For more information on requirements for inventory validation, please see section IV.D.4 of this preamble.

The EPA modified § 141.90(e)(10) to enhance the clarity of the language. Specifically, the text now makes it clear that the system must provide documentation of service lines not replaced for systems that lack access, as described in § 141.84(d)(2). In addition, the language clearly states that for systems that lack access because of lack of owner consent where consent is required by State or local law, the system must provide documentation of each reasonable effort conducted by the system as described in § 141.84(d)(3). The EPA also moved the requirement to report the total number of lead and galvanized requiring replacement service lines not replaced because the system does not have access to conduct full service line replacement from § 141.90(e)(10) to § 141.90(e)(8)(ix) because it is summary information that is similar to the other items in the latter section. The EPA moved this provision for clarity and the move does not substantively impact the requirement.

For the final LCRI, the EPA added clarifying language to the public education reporting requirements (§ 141.90(f)(1)) for systems to submit a copy of all written materials to the State prior to delivery. The EPA also added a provision to provide the State discretion to require approval of the written materials prior to their delivery. This language is consistent with the language in § 141.85(a)(1) of the LCRI. In addition, the EPA clarified that systems that have previously submitted to the State a list of newspapers, radio stations, television stations, and facilities and organizations to which the system delivered public education materials, do not need to resubmit this list, unless required to do so by the State (§ 141.90(f)(2)).

The EPA added clarifications to § 141.90(f)(3) on the reporting requirement to send an example copy of the consumer notification of tap sampling results to the State along with a certification that the notification has been distributed in a manner consistent with the requirements of § 141.85(d). This requirement applies to all tap sampling results, including those used to calculate the 90th percentile value as described in § 141.86 and consumer-requested samples outside the tap sampling period for systems on reduced monitoring. The new text clarifies that some items must be reported 30 days following the end of the tap sampling period and that some items must be reported annually by January 30. The different schedules are necessary because certain types of tap sampling, such as consumer-requested samples, may occur outside the tap sampling period. The EPA made this change for clarity and to allow for deadlines that made sense for samples that may be taken outside the tap sampling period.

For the final LCRI, the EPA reordered the school and child care facility sampling at § 141.90(i) to clarify that if systems report they do not serve schools or child care facilities, they must continue to certify that they do not serve schools or child care facilities. If they do begin to serve one or more schools or child care facilities, they must meet the requirements of the rest of the section. The EPA made this change because language in the proposal could be read to provide that the systems would not be required to monitor for new schools or child care facilities after initially reporting none served. The EPA finds it critical that all new or newly identified schools and child care facilities are subject to the remaining reporting requirements of this section. In addition, the EPA reorganized sections § 141.90(i)(3)(iii) through (vi) to make the sections more readable and understandable. However, the EPA did not make substantive changes to these sections for the final rule.

O. Other Proposed Revisions to 40 CFR Part 141

1. Consumer Confidence Report Rule (40 CFR Part 141, Subpart O)

a. Rationale and Proposed LCRI Revisions

All CWSs are required by SDWA to provide their customers at least once a year with a CCR, a drinking water quality report that summarizes the state of their drinking water supply. The CCR must include information about the water system, sources of water, detected contaminants including lead, compliance with drinking water rules including the lead and copper rules, as well as other information. CCR requirements are described in the CCR Rule (40 CFR part 141, subpart O), which is part of the 1996 Right to Know provisions of SDWA. On May 24, 2024, the EPA published a final rule to strengthen the CCR Rule (89 FR 45980, USEPA, 2024c). The EPA revised the CCR Rule in accordance with America's Water Infrastructure Act (AWIA) of 2018 and to improve the readability, clarity, and understandability of CCRs as well as the accuracy of the information presented, improve risk communication in CCRs, incorporate electronic delivery options, provide supplemental information regarding lead levels and control efforts, and require systems who serve 10,000 or more persons to provide CCRs to customers biannually (twice per year). Under the LCRI, the EPA proposed to revise the lead and copper related requirements of the CCR to further enhance risk communication and provide additional information about sampling in schools and child care facilities and the service line replacement plan. These proposed revisions are described below.

i. Lead Information Statement

All CWSs are required to include an informational statement about lead in drinking water in their CCRs. The lead information statement is intended to help ensure vulnerable populations or their caregivers receive information at least once a year on how to reduce their risk of exposure to lead in drinking water. In the LCRI, the EPA proposed to revise the lead information statement. The proposed revisions included providing information about the risks of lead to all age groups, additional measures consumers can take to reduce

exposure to lead in drinking water, new language recommending flushing for water used in cooking and formula feeding, and using filters properly. Revisions to the lead information statement were in response to various stakeholder comments, including feedback received as part of the LCRR review engagements, public meetings on environmental justice considerations and other stakeholder meetings held to support the development of the proposed LCRI (USEPA, 2023g; USEPA, 2023h), written public comments submitted to the LCRI docket following the environmental justice meetings (Docket ID EPA–HQ–OW–2022–0801), and written comments submitted on the proposed CCR Rule Revisions (Docket ID EPA–HQ–OW–2022–0260). The proposed revised information statement about lead was as follows and as described in the proposed LCRI:

> Lead can cause serious health effects in people of all ages, especially pregnant people, infants (both formula-fed and breastfed), and young children. Lead in drinking water is primarily from materials and parts used in service lines and home plumbing. [INSERT NAME OF UTILITY] is responsible for providing high quality drinking water and removing lead pipes, but cannot control the variety of materials used in the plumbing in your home. You can help protect yourself and your family by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Using a filter, certified by an American National Standards Institute accredited certifier to reduce lead, is effective in reducing lead exposures. Follow the instructions provided with the filter to ensure the filter is used properly. Use only cold water for drinking, cooking, and making baby formula. Boiling water does not remove lead from water. Before using tap water for drinking, cooking, or making baby formula, flush your pipes for several minutes. You can do this by running your tap, taking a shower, doing laundry or a load of dishes. If you have a lead service line or galvanized requirement replacement service line you may need to flush your pipes for a longer period. If you are concerned about lead in your water and wish to have your water tested, contact [INSERT NAME OF UTILITY and CONTACT INFORMATION]. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at *https://www.epa.gov/safewater/lead.*

ii. Mandatory Lead Health Effects Language

Under the CCR Rule Revisions, CWSs are required to include in the report the mandatory lead or copper health effects language listed in appendix A to subpart O of part 141 when they fail to take one or more actions prescribed by § 141.80(d), § 141.81, § 141.82, § 141.83, § 141.84, or § 141.93. With the LCRI, the EPA proposed to require CWSs to include the mandatory lead or copper health effects language when they fail to take one or more actions prescribed by §§ 141.80 through 141.93. This would expand the requirement to apply to more situations, such as failing to meet the public education requirements in § 141.85 or requirements for sampling in schools and child care facilities under § 141.92, so that consumers are more informed of the health effects of lead and copper. Additionally, the proposed LCRI revised the mandatory lead health effects language as described in the LCRI proposal and provided in section J.2.d of this preamble to clarify health effects in all age groups and include information about contacting your health care provider for more information. The EPA proposed the same health effects language in public education and public notification about lead in the proposed LCRI.

iii. Other Requirements

The EPA proposed, under § 141.153, to require that water systems include in the CCR a statement that the water system is required to sample for lead in schools and licensed child care facilities as requested by the facility, in accordance with § 141.92 of the proposed LCRI, to direct relevant members of the public to contact their school or child care facility for further information about potential sampling results.

In the LCRI, the EPA proposed to require water systems to make their service line replacement plan publicly available. Accordingly, the EPA also proposed to require CWSs with lead, GRR, or unknown service lines in their inventory to include in the CCR information on how to obtain a copy of the service line replacement plan or for systems serving more than 50,000 persons, how to view the plan on the internet. Including information about how to access the plan in the CCR would further increase transparency about the service line replacement process, accessibility of the plan, and consumer awareness about service line replacement in their community.

The EPA proposed in the LCRI to expand the 2021 LCRR requirement to include a statement on the service line inventories to also include information on known lead connectors or unknown connectors.

b. Summary of Comments and the EPA's Response

i. Comments on Language About the Safety of Water in the CCR

The EPA received comments concerning systems using misleading language in the CCR about the safety of the water in relation to lead and copper. Commenters were concerned that water systems have used language in the CCR suggesting a community's water was safe with respect to lead because it met the lead action level or was in compliance with the rule. Commenters argued this suggestion contradicted the EPA's messaging that there is no level of lead without health risks. Some commenters also expressed concerns with the language about consumers having their water tested if they are concerned about lead, noting that a one-time test could be misleading. In response to commenters' concerns about statements indicating the water is safe if the system's sampling results are below the lead action level and in regulatory compliance, the EPA has updated the lead information statement (§ 141.154(d)(1)) required in the CCR to note that there is still a risk of lead exposure even when tap results at a given point do not detect lead. The EPA also notes that the existing CCR Rule in § 141.153(h)(5) states that systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purposes of the report. As noted in the Final CCR Rule Revisions, ''the EPA interprets these provisions as precluding misleading statements by water systems because such statements would detract from the purpose of the report by downplaying the situational information and potential risks to consumers served by the system'' (89 FR 45980, USEPA, 2024c). In addition, as noted in the Final CCR Rule Revisions, the EPA intends to work with stakeholders on developing CCR communication tools and guidance to continue to support CCRs that are accurate, clear, understandable, and readable with regards to lead as well as other contaminants (89 FR 45980, USEPA, 2024c).

Some commenters wrote that the CCR should include information about how common lead is not only in service lines but in premise plumbing and that the CCR should discuss all sources of lead in drinking water. The EPA notes that the lead information statement has included, since the 2007 LCR revisions and maintained in the LCRI, language that service lines and home plumbing are the primary sources of lead in

drinking water. The EPA requires the statement to include information on sources of lead exposure recognizing there could be sources beyond the control of the water system, such as premise plumbing, to help inform the consumer of all potential lead drinking water risks so they can take proactive steps to protect their health. The lead information statement recommends that consumers identify and remove any lead plumbing parts from their home and includes additional steps to help reduce their exposure to lead in drinking water such as using a filter certified to reduce lead.

Some commenters asked the EPA to adopt language in the CCR lead informational statement that recommends all consumers at all times use a filter certified to remove lead. The EPA disagrees with these commenters because not all consumers have lead plumbing or are served by service lines that are known to or potentially contain lead. However, the EPA notes that the lead information statement includes filters as an effective option for reducing lead exposure and emphasizes their proper use (§ 141.154(d)(1)).

Some commenters expressed concerns with the CCR's proposed lead information statement being too long, particularly the added steps for consumers to reduce their exposure to lead in drinking water. Some commenters recommended including this information in guidance instead so that water systems have more flexibility in how they present the information. The EPA disagrees with removing this mandatory language from the CCR as it is necessary to inform consumers of actions they can take to reduce their risk of exposure to lead in drinking water and thereby prevent known or anticipated adverse health effects to the extent feasible. In addition, the rule has allowed, since the 2007 LCR revisions, water systems to write their own informational statement in consultation with the State in accordance with § 141.154(d)(2). Under the scope of the revised CCR Rule, the EPA revised § 141.154(d)(2) to require approval of an alternative educational statement from the CWS's primacy agency to use in the CCR. Therefore, water systems may make adjustments to the way they present the information with approval of the State.

ii. Comments on Inclusion of Replacement Plan Information in the CCR

The EPA proposed in the LCRI to require CWSs with lead, GRR, or lead status unknown service lines to include in the CCR information about the service line replacement plan and how to obtain a copy of the replacement plan. The EPA received comments supporting the inclusion of this information in the CCR and is retaining these requirements in the final LCRI. The final rule states that for systems with lead, GRR, or lead status unknown service lines in the systems inventory pursuant to § 141.84(a) and (b), the CCR must include information on how to obtain a copy of the service line replacement plan or view the plan on the internet if the system is required to make the service line replacement plan available online (§ 141.153(h)(8)(iii)).

iii. Comments on Including Statement About School Sampling in the CCR

The EPA requested comment in the proposed LCRI on the proposed requirement for systems to provide an informational statement in the CCR about school and child care sampling requirements and that consumers can contact the school or child care facility about any potential sampling results. The EPA received mostly supportive comments for this provision to be included in the final LCRI. The EPA also received comments noting the inclusion of this information in the CCR could potentially make the CCR more confusing due to the report already being complicated. While the EPA acknowledges commenters' concerns about the amount of information in the CCR, the agency is maintaining this requirement in the final rule given the public health benefit this information provides. Since the EPA does not have the authority under SDWA to require schools and child care facilities to share their sampling results, the agency is requiring this CCR provision to help ensure that consumers are aware of the school and child care sampling requirements and that they can reach out to the school or child care facility about any potential sampling results. Directing consumers to contact the school or child care facility connects the consumer with the entity who can better respond to any follow-up questions as well such as questions regarding next steps including any remediation actions.

The final rule retains the proposed requirement to include an informational statement in the CCR about school and child care sampling requirements with a slight modification to be clearer that the system should direct consumers to contact the school or child care facility for further information about potential sampling results as stated in § 141.153(h)(8)(v).

c. Final Rule Requirements

i. Lead Information Statement

In the final LCRI, the EPA is revising the lead information statement with minor modifications in response to comments that recommended adding language to the CCR about the risk of lead exposure even when tap results at a given point in time do not detect lead. The EPA is finalizing the below lead information statement that includes changes made in the proposed LCRI as well as additional changes made in response to comments received on the proposed LCRI:

> Lead can cause serious health effects in people of all ages, especially pregnant people, infants (both formula-fed and breastfed), and young children. Lead in drinking water is primarily from materials and parts used in service lines and in home plumbing. [INSERT NAME OF SYSTEM] is responsible for providing high quality drinking water and removing lead pipes but cannot control the variety of materials used in the plumbing in your home. Because lead levels may vary over time, lead exposure is possible even when your tap sampling results do not detect lead at one point in time. You can help protect yourself and your family by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Using a filter, certified by an American National Standards Institute accredited certifier to reduce lead, is effective in reducing lead exposures. Follow the instructions provided with the filter to ensure the filter is used properly. Use only cold water for drinking, cooking, and making baby formula. Boiling water does not remove lead from water. Before using tap water for drinking, cooking, or making baby formula, flush your pipes for several minutes. You can do this by running your tap, taking a shower, doing laundry or a load of dishes. If you have a lead service line or galvanized requiring replacement service line, you may need to flush your pipes for a longer period. If you are concerned about lead in your water and wish to have your water tested, contact [INSERT NAME OF SYSTEM and CONTACT INFORMATION]. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at *https://www.epa.gov/safewater/lead.*

ii. Mandatory Lead Health Effects Language

In the final rule, the EPA is finalizing the mandatory health effects language, as proposed, listed in appendix A to subpart O of part 141 to be included in the CCR when a CWS fails to take one or more actions prescribed by §§ 141.80 through 141.93. Additionally, the rule finalizes the lead health effects language, as proposed and provided in section IV.J.2.d of this preamble.

iii. Other Requirements

The final LCRI requires water systems to include in the CCR a general statement that the CWS is required to sample for lead in schools and licensed child care facilities in accordance with § 141.92 (see § 141.153(h)(8)(v)). This provision will help ensure that consumers are aware of the school and child care sampling requirements and that they can reach out to schools or child care facilities about any potential sampling results. Due to comments received on the proposed LCRI, this language has been modified for the final LCRI to be clearer that the system should direct consumers to contact the school or child care facility for further information about potential sampling results in accordance with § 141.92. The school and child care facility can provide additional information to the sampling results including next steps such as any remediation actions.

The final rule requires that the CCR expand the service line inventory statement to include information on known and unknown lead connectors such that the statement describes that a service line inventory (including inventories with no lead, GRR, lead status unknown, known lead connectors or unknown connectors) has been prepared and the statement must include instructions on how to access the inventory (§ 141.153(h)(8)(ii)).

The final LCRI requires water systems to make the service line replacement plan publicly available (see section IV.C of this preamble for more information about the replacement plan). Additionally, CWSs with lead, galvanized requiring replacement, or lead status unknown service lines in their inventory are required to include in the CCR information on how to obtain a copy of the service line replacement plan or for systems serving more than 50,000 persons, how to view the plan on the internet (§ 141.153(h)(8)(iii)).

The CCR Rule Revisions (89 FR 45980, USEPA, 2024c) moved the CCR requirement for a service line inventory statement from § 141.153(d)(4)(xi) to § 141.153(h)(8)(ii) and the requirement for information about accessing complete lead tap sampling data from § 141.153(d)(4)(xii) to § 141.153(h)(8)(i) of the CFR. Therefore, the final LCRI is also moving other requirements that were proposed in § 141.153(d)(4) to § 141.153(h)(8); these include the statement about the service line replacement plan and school sampling. In addition, the CCR Rule Revisions added a requirement for information about corrosion control efforts in § 141.153(h)(8)(iii) which the final LCRI moved to § 141.153(h)(8)(iv) in order to keep the requirements related to information on the service line inventory and replacement plan together.

2. Public Notification Rule (40 CFR Part 141, Subpart Q)

a. Rationale and Proposed LCRI Revisions

The EPA promulgated a Public Notification (PN) Rule in 40 CFR part 141, subpart Q, in 2000 (65 FR 26035, USEPA, 2000b). This PN Rule implements section 1414(c)(1) and (2) of SDWA. The PN Rule requires water systems to provide public notification of any failure of the water system to comply with a maximum contaminant level, a prescribed treatment technique, or failure to perform required water quality monitoring, or testing procedures; any variance or exemption the system has been granted, or failure to comply with the requirements of any schedule set under a variance or exemption; or reporting and recordkeeping violations under subpart Y; and certain specified situations such as the occurrence of a waterborne disease outbreak or emergency and the availability of unregulated contaminant monitoring data (see § 141.201, table 1).

In 2016, Congress amended sections 1414(c)(1) and (2) of SDWA, in the Water Infrastructure Improvements for the Nation (WIIN) Act, to require the EPA's implementing regulations to ''specify notification procedures for'' public notice no later than 24 hours after the water system learns of each exceedance of the action level for lead prescribed under § 141.80(c) of 40 CFR part 141, ''or a prescribed level of lead that the Administrator establishes for public education or notification in a successor regulation promulgated pursuant to section 1412'' if the exceedance ''has the potential to have serious adverse effects on human health as a result of short term exposure'' (42 U.S.C. 300g–3(c)(1)(D) and (c)(2)(C)). In the 2021 LCRR rulemaking, the EPA determined that ''such exceedances [of the lead action level] have the potential to have serious adverse health effects on human health as a result of short-term exposure'' and therefore warranted the same treatment as other situations currently categorized as Tier 1 violations subject to the 24-hour notification requirements (86 FR 4239–4240, USEPA, 2021a). Under the revisions to subpart Q introduced in the 2021 LCRR, CWSs and NTNCWSs with a lead action level exceedance must provide public notice to persons served by the system within 24 hours of learning of the action level exceedance; that is, within 24 hours of the system receiving and calculating the 90th percentile value, or after the data is submitted to the State and the State calculates the 90th percentile. The notice must be in a form and manner reasonably calculated to reach all persons served, as described in the PN Rule (§ 141.202(c)). A copy of the notice must also be sent to both the State and the EPA Administrator in accordance with the public notification reporting requirements of § 141.31(d), which was also amended in the 2021 LCRR. This notice to the Administrator for a lead action level exceedance is needed because section 1414(c)(2)(C)(iii) of SDWA was amended by the WIIN Act to require that such notifications be provided to the Administrator in addition to the State to allow the EPA to identify whether the agency must provide notice where required in section 1414(c)(2)(D). It provides that if a State with primacy enforcement responsibility or the water system has not issued a notice for a lead action level exceedance that has the potential to have serious adverse effects as a result of short-term exposure, the Administrator is required to issue the notice. Because the EPA does not have any obligation to issue a Tier 1 public notice for violations of other drinking water standards in States with primacy, there is no need for the EPA to be notified in those other Tier 1 situations.

In addition to lead action level exceedances, there are violations that also require public notification for both lead and copper (see appendix A to subpart Q of part 141). Tier 2 public notification is required for a treatment technique violation for both lead and copper no later than 30 days after the system learns of the violation. Under the revisions to subpart Q introduced in the 2021 LCRR, this includes violations to §§ 141.80 through 141.84, which describe compliance dates of the rule, the action level, CCT, source water treatment, and service line inventory and replacement requirements; however, § 141.80(c), which describes exceedances of the lead action level, is excluded from the Tier 2 public notification requirements since lead action level exceedances require Tier 1 public notification. Tier 2 public notification is also required for violations to § 141.85(a) through (c) and (h), which concern the content of public education materials and inclusion of information for consumers with limited English proficiency, delivery of public education after a lead action level

exceedance, supplemental monitoring for lead when there is a systemwide lead action level exceedance, and outreach activities for community water systems that fail to meet the LSLR goal under the 2021 LCRR. In addition, Tier 2 public notification is required for violations to § 141.93, which describes flexibilities for small water systems to comply with the rule.

As described in section IV.J.2.c of this preamble, the EPA proposed in the LCRI to require consumer notification of supplemental monitoring results for lead under § 141.85(c)(3); the EPA proposed to exclude this from the Tier 2 public notification requirements in subpart Q as this pertains to notification of supplemental sampling conducted at individual tap sampling sites, rather than systemwide. In addition, as discussed in section IV.J.2.a of this preamble, the EPA proposed in the LCRI to revise § 141.85(h) to require outreach activities for systems that fail to meet the average annual replacement rate, instead of the goal LSLR rate as required under the 2021 LCRR. Violations to this proposed requirement would require Tier 2 public notification under the proposed LCRI. The EPA also proposed to revise subpart Q to require Tier 2 public notification for violations to the proposed additional public education and filter requirements for water systems with multiple lead action level exceedances under § 141.85(j). See section IV.J of this preamble for more information about the proposed public education requirements. Tier 3 public notification is required for monitoring and testing procedure violations for both lead and copper no later than one year after the system learns of the violation or begins operating under a variance or exemption. These include violations to §§ 141.86 through 141.90 of the 2021 LCRR and proposed LCRI. The EPA also proposed to require Tier 3 public notification for violations to § 141.92; as with violations to other monitoring and testing requirements, the EPA believes that the public should be notified when water systems fail to conduct required sampling in schools and child care facilities.

The EPA also proposed to make conforming changes to the PN Rule as a result of changes the agency proposed to make in the proposed LCRI and the CCR related to the standard health effects language for lead in appendix B to subpart Q of part 141, to be consistent with the proposed revised lead health effects language required in public education and the CCR. See section IV.J.2.d of this preamble for more information about the proposed revised mandatory lead health effects language.

b. Summary of Comments and the EPA's Response

Some commenters opposed the Tier 1 24-hour public notification requirement for a lead action level exceedance. Some commenters recommended only requiring Tier 1 public notification for a lead action level exceedance to customers served by a lead, GRR, or lead status unknown service line. The EPA notes that the PN Rule requires water systems to provide public notices to ''persons served by the water system.'' The EPA also believes it is important for all persons served by a water system to be notified of a systemwide lead action level exceedance in the same time frame. While people served by a lead, GRR, or unknown service line are at higher risk of exposure to lead in drinking water than those who are not, other people may also be exposed through lead-containing plumbing, particularly if there is a systemwide issue such as increased corrosivity of the water. Therefore, it is important for all persons served by the system to be notified so they can decide whether to take protective actions to reduce their potential exposure to lead in drinking water.

Some commenters disagreed with the Tier 1 designation for a lead action level exceedance, arguing that lead does not pose ''acute'' public health risks like other Tier 1 situations and expressed concerns with lead ALEs being determined based on the 90th percentile. The EPA has determined that exceedances of the lead action level have the potential to have serious adverse health effects on human health as a result of short-term exposure and therefore warrant the same treatment as other situations currently categorized as Tier 1 violations subject to the 24-hour notification requirements. While the lead action level is not a health-based level, there is no safe level of lead in drinking water and the MCLG for lead is zero. In addition, there are life stages (*e.g.,* early childhood) where any lead exposure is especially problematic (USEPA, 2013; American Academy of Pediatrics, 2024).

Some commenters requested that systems start the process to distribute the public notice of a lead action level exceedance within 24 hours, but not have to complete delivery within 24 hours. The EPA notes that the PN Rule requires systems to deliver all Tier 1 public notices within 24 hours; this requirement is not limited to lead action level exceedances as other situations also can require a Tier 1 public notice (see § 141.202). Moreover, the EPA has determined that it is feasible for water systems to provide Tier 1 public notice of a lead action level exceedance within 24 hours of the system learning of the exceedance. The EPA notes that the PN Rule provides water systems with several delivery options to ensure the Tier 1 public notice reaches all persons served within 24 hours, including use of broadcast media, posting the notice in conspicuous locations throughout the service area, hand delivery of the notice, or using another method approved by the primacy agency (§ 141.202(c)). Systems can prepare to provide the notice by creating a notification template in advance and may choose from several options for distribution of a public notification that make it feasible to provide the notice to all persons served by the system within 24 hours of learning of the exceedance.

Some commenters requested that to ensure consistent messaging in public notifications, the EPA standardize the language or provide resources and materials. They stated that this would also reduce the burden on systems to develop the notices and on States to ensure their quality and accuracy. The PN Rule includes minimum requirements for what kind of information must be included in public notices (see § 141.205(a) and (b)) for many drinking water contaminants, including standardized health effects language for lead and copper as well as other standardized language that applies to any drinking water contaminants. States have the authority to implement their own requirements for additional standardized language (see § 142.16(a)(1)). In addition, the EPA has already provided public notification resources and templates to assist water systems and States with the revisions to subpart Q introduced in the 2021 LCRR. These templates provide consistent language that also enables water systems to provide system-specific information about the sources of lead in their community and the actions the water system is taking to reduce lead levels. See *https://www.epa.gov/dwreginfo/lead-and-copper-rule-implementation-tools#TIER_1.* The EPA also intends to provide updated resources, templates, and example public notification materials to assist water systems and States with the revisions to subpart Q introduced in the LCRI.

Some commenters requested that the materials should use plain language and be translated to different languages. The PN Rule requires that the public notices do not include overly technical language (§ 141.205(c)(1)). The PN Rule also includes multilingual requirements for public notices (§ 141.205(c)(2)). The PN Rule requires water systems serving

a large proportion of non-English speaking consumers, as determined by the primacy agency, to contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the water system to obtain a translated copy of the notice or to request assistance in the appropriate language.

Some commenters stated that failure to sample for lead in schools and child care facilities, in accordance with § 141.92, should not be a Tier 3 violation. The EPA disagrees and notes that monitoring and testing procedure violations constitute Tier 3 violations, therefore it is appropriate for this to include violations to monitoring requirements for lead in schools and child care facilities. As noted earlier, the EPA believes that the public should be notified when water systems fail to conduct required sampling in schools and child care facilities. Tier 3 violations require public notification no later than one year after the system learns of the violation. The EPA notes that if the State has issued a waiver under § 141.92(h), the water system would not be in violation for not sampling in the schools and child care facilities covered by the waiver (see section IV.L.2 of this preamble for a discussion on waivers for school and child care facility sampling).

c. Final Rule Requirements

Under the LCRI, a lead action level exceedance will continue to trigger the requirement for Tier 1 public notification as required in section 1414(c)(2)(C) of SDWA. The EPA has concluded that lead action level exceedances have the potential to have serious adverse effects on human health as a result of short-term exposure. SDWA mandates that notice in such a situation be distributed ''as soon as practicable, but not later than 24 hours after the PWS learns of the violation or exceedance.'' While the feasibility analysis the EPA conducts in establishing a NPDWR is not a prerequisite to implementation of this statutory mandate, water systems have been complying with the Tier 1 24-hour notice requirement for other situations besides a lead action level exceedance since the May 6, 2002, compliance date of the PN Rule, and therefore should also be able to do so for lead action level exceedances.

Because the EPA is not prescribing a level of lead for public notification in the LCRI that is different from the lead action level in § 141.80(c), the EPA is updating appendix A to subpart Q of part 141 to reflect the agency's revised lead action level of 0.010 mg/L in the contaminant description in the left column (see section IV.F.4 of this preamble for more information about the action level). As noted in the proposed LCRI (88 FR 84968, USEPA, 2023a), water systems must comply with this provision starting October 16, 2024. Beginning on that date, systems must comply with the Tier 1 PN requirement for a lead action level of 0.015 mg/L, and beginning on the final LCRI compliance date, systems must comply with the revised lead action level of 0.010 mg/L (see section IV.F.4 of this preamble).

Water systems required to conduct Tier 1 public notification for a lead action level exceedance must send a copy of the notice to the Administrator and head of the primacy agency within 24 hours of learning of the exceedance in accordance with § 141.31(d)(2). Within 10 days of completing the public notification requirements, the water system must also send certification of compliance along with a copy of the distributed notice to the primacy agency (§ 141.31(d)(1)); this reporting requirement also applies to all other public notices required under the PN Rule (40 CFR part 141, subpart Q).

When the EPA amended § 141.31(d) in the 2021 LCRR to add the requirement for providing a copy of the Tier 1 public notice of a lead action level exceedance to the Administrator and head of the primacy agency within 24 hours of learning of the exceedance (§ 141.31(d)(2)), the agency inadvertently removed the pre-existing requirement in § 141.31(d)(1) to provide copies of Tier 1 public notices for violations and situations involving drinking water contaminants other than lead (*e.g.,* violations of the MCL for *E. coli,* waterborne disease outbreaks, etc.) to the primacy agency. The 2021 LCRR amendment also inadvertently left out a requirement for water systems to provide a copy of the distributed Tier 1 public notice for a lead action level exceedance when certifying compliance to the primacy agency. In the LCR, prior to the revisions introduced by the 2021 LCRR, a copy of all distributed public notices was required to be provided with certification to the primacy agency within 10 days of completing the public notification requirements. For the final LCRI, the EPA is making technical corrections to the requirements by restoring the text that was deleted in the 2021 LCRR version of §; 141.31(d)(1) to prevent these errors introduced in the 2021 LCRR from being implemented. This technical correction will ensure that representative copies of all distributed public notices must be provided to the primacy agency with certification within 10 days of completing the public notification requirements, in addition to requiring a copy of Tier 1 public notices of lead action level exceedances to the Administrator and head of the primacy agency within 24 hours. The EPA is requiring water systems to continue to comply with § 141.31(d)(1) as codified on July 1, 2020, between October 16, 2024, and the LCRI compliance date to avoid any lapse in requirements (see section V.B of this preamble for discussion of compliance dates).

The EPA is finalizing revisions to the lead and copper violations that require Tier 2 and Tier 3 public notification in appendix A to subpart Q of part 141. Water systems must conduct Tier 2 public notification for treatment technique violations to §§ 141.80 (except paragraph (c)) through 141.84 and 141.85(a) through (c) (except paragraph (c)(3)), which describe compliance dates of the rule, CCT, source water treatment, service line inventory and replacement requirements, the content of public education materials and inclusion of information for consumers with limited English proficiency, delivery of public education after a lead action level exceedance, and supplemental monitoring for lead. As noted earlier, § 141.80(c) which describes exceedances of the lead action level is excluded from the Tier 2 public notification requirements since lead action level exceedances require Tier 1 public notification. The EPA is also excluding from the Tier 2 public notification requirements violations to § 141.85(c)(3), which requires a water system to notify a consumer of their supplemental lead sampling results under the LCRI. In addition, Tier 2 public notification is required for violations to § 141.93, which describes flexibilities for small water systems to comply with the rule. The EPA is finalizing requirements for water systems to conduct Tier 2 public notification for violations to § 141.85(h), which requires outreach activities for systems that do not meet the mandatory service line replacement rate, and § 141.85(j), which requires additional public education and filter requirements for water systems with multiple lead action level exceedances under the LCRI. Tier 3 public notification will be required for lead and copper monitoring and testing procedure violations to §§ 141.86 through 141.90 and 141.92, which concern tap water monitoring, water quality parameter monitoring,

source water monitoring, analytical methods, reporting requirements, and sampling for lead in schools and child care facilities.

The EPA is finalizing conforming changes to the PN Rule as a result of changes the agency is making in the LCRI and the CCR related to the standard health effects language for lead in appendix B to subpart Q of part 141, to be consistent with the revised lead health effects language required in public education and the CCR. See section IV.J.2.d of this preamble for more information about the revised mandatory lead health effects language.

3. Definitions

a. Rationale and Proposed Requirements

In accordance with the EPA's goal to simplify the LCRI, the EPA proposed new and revised definitions for inclusion in § 141.2 (USEPA, 2023a). The EPA proposed new definitions to conform to new regulatory requirements and updated existing definitions to conform to changes made to existing requirements. For the LCRI, the EPA proposed new and updated definitions for ''action level,'' ''child care facility,'' ''connector,'' ''Distribution System and Site Assessment,'' ''find-and-fix,'' ''galvanized requiring replacement,'' ''lead service line,'' ''lead status unknown service line,'' ''newly regulated public water system,'' ''partial service line replacement,'' ''service line,'' ''small water system,'' ''tap monitoring period,'' ''tap sampling period,'' and ''wide-mouth bottle.'' The EPA proposed to remove the definition of ''full service line replacement,'' ''gooseneck, pigtail, or connector,'' ''partial lead service line replacement,'' ''trigger level,'' and ''tap sample monitoring period.'' The EPA also proposed minor revisions to select definitions for ''elementary school,'' ''galvanized service line,'' ''pitcher filter,'' ''secondary school,'' ''medium-size water system'' (renamed and updated as ''medium water system''), ''optimal corrosion control treatment,'' ''tap sampling protocol,'' and ''system without corrosion control treatment.'' The LCRI proposal contains how the EPA proposed to add, revise, or remove the definitions listed above.

b. Summary of Comments and the EPA's Response

Commenters suggested various revisions to the proposed definition of ''service line,'' which was defined as ''a portion of pipe which connects the water main to the building inlet. Where a building is not present, the service line connects the water main to the outlet.'' Commenters noted that there may be some situations where a water main does not exist in the system (*e.g.,* a single building with a service line connecting the wellhouse to the building), and, therefore, the definition should be revised accordingly to accommodate for other distribution system configurations. The EPA acknowledges that water mains may not be present in all cases where there are service lines, as described in the EPA's ''Developing and Maintaining a Service Line Inventory: Small Entity Compliance Guide'' (or LCRR Small Systems Guidance) guidance document, which includes examples of service lines that are not connected to a water main (*e.g.,* connected to a pressure tank or if they draw water directly from a well) (USEPA, 2023n). Thus, the EPA is defining service line in the final rule to reflect that service lines may be connected to a ''water main'' or ''other conduit for distributing water to individual consumers or groups of consumers.'' The reference to ''water main'' in the proposed definition was for descriptive purposes, and commenters did not identify a technical, policy, or legal reason to exclude service lines in the absence of a water main. This addition to the definition clarifies that the descriptive term ''water main'' was not intended to reduce the scope of the service line inventory or replacement requirements that apply to all services lines (*i.e.,* the lines that distribute water from the PWS's conduit for moving water from its source to its customers and consumers).

Commenters recommended that the EPA exclude pipes not anticipated for potable use from the service line definition because they would not result in human lead exposure. The EPA disagrees with this recommendation. The service lines covered by the rule may be used for the distribution of potable water regardless of whether that is their intended use. Water lines used exclusively for non-potable applications does not preclude the possibility that the water lines could in fact be used for human consumption as well. An NPDWR provision that applies only to where the water is actually used for human consumption is administratively unworkable and difficult to implement. See section IV.D.1 of this preamble for information related to inventorying all service lines in a water system's service area regardless of intended potable or non-potable applications.

Commenters suggested that the EPA clarify whether water lines in a community downstream from a master meter or other single point of connection meet the proposed definition of ''service line.'' In some situations, an apartment complex, manufactured housing community, or other multi-family entity will have a master meter at the property line of the community. If these communities are considered part of or within a CWS or NTNCWS service area, then that water system is required to inventory all service lines, even if they are beyond a master meter, just as the system is required to inventory service lines between a water main and a single-family residence regardless of the presence of a meter between the water main and the building inlet. See section IV.D.1 of this preamble for information related to master meters and inventorying all service lines in a water system's service area.

Some commenters disagreed with the EPA's proposed deletion of references to ownership in the service line definition. Commenters were concerned that without mention of ownership, water systems could define a service line in multiple parts, such as the portion that is system owned. The EPA disagrees with these comments because the ownership is not relevant to the system's ability to inventory or replace service lines; instead, it is based on control, which the final rule equates to access. Additionally, statements about access or control are related to regulatory requirements, are included in § 141.84, and are less suited for inclusion in the service line definition. See section IV.B of this preamble for further discussion on access and control. The EPA also notes that the final definition includes the entire service line, stating that the service line connects to the building inlet (or the outlet where a building is not present).

Commenters recommended that the EPA clarify or define the term ''building inlet'' within its service line definition. Because there are a multitude of plumbing configurations that can exist, it can be challenging to encapsulate all potential configurations in a single, national-level definition. However, the term ''building inlet'' best encapsulates these configurations. Commenters expressed concerns with use of the term ''building inlet'' because systems may interpret the definition in a way that results in short service line segments remaining in place past the building inlet after full service line replacement. The final LCRI mandates full LSLR, which requires the removal of all lead material along the service line and associated lead connector.

While some commenters agreed with the proposed connector length of two feet in their comments on the proposed rule, others stated that their water

system uses connectors greater than two feet (*e.g.,* three, four, and five feet) and recommended the EPA update the connector definition to account for these longer connectors. While no commenter provided additional data beyond anecdotes from their system and State, the EPA evaluated data on connector length from current manufacturers websites and historical sources while considering the lengths recommended by commenters (The Cadmus Group, 2024a; 2024b). Many recent sources define lead connectors at two feet; however, it is unclear if these sources cite this length because it was included in the EPA's LCRR Inventory Guidance (USEPA, 2022c). The EPA did not find connectors currently sold by manufacturers, instead finding information suggesting connectors are not currently used in drinking water infrastructure because modern flexible alternatives for piping eliminate the need for them. While the EPA found generally limited data, one historical plumbing and heating materials catalogue showed lead connectors sold and widely distributed at lengths ranging from 18 to 36 inches (USEPA, 2022c). Thirty-six inches (three feet) was one of the pipe lengths recommended by commenters. Accordingly, the EPA chose to update the connector definition to encompass lead pipes up to three feet in length. While individual water systems indicated in their comments use of connectors in greater length, one of the primary goals of the LCRI is to replace lead and GRR service lines as quickly as feasible. Lead pipes are anticipated to contribute more lead into drinking water with increasing length (Deshommes et al., 2016; Sandvig et al., 2008), so defining these longer lead pipes as connectors instead of LSLs would exclude them from the system's service line replacement program, resulting in potentially delayed replacement from these significant lead sources.

Commenters also stated that the connector definition should exclude reference to a specific length, as water systems may not know the length of connectors in their distribution system. The EPA acknowledges that some systems may lack records which indicate connector length; however, other commenters supported the clarity that a defined length provides for water systems and States to distinguish whether a lead pipe is subject to requirements for lead connectors or LSLs (*i.e.,* inventorying, replacement, tap sampling, and public education). Additionally, the EPA is concerned that lack of a clear definition could create a loophole by which systems avoid replacing LSLs as part of their service line replacement program by classifying them as connectors. Thus, the final LCRI defines connector as piping limited to three feet that can be bent and is used for connections between service piping, typically connecting the service line to the main.

The EPA received comments suggesting that the EPA should remove the clause that galvanized service lines that ''ever were'' downstream of an LSL be considered GRR, or the GRR definition should not include galvanized service lines where systems are unable to show no upstream LSL has ever been in place. Such commenters argued that the lead exposure risks to public health decrease over time and that systems should be permitted to conduct studies and adapt their replacement strategy based on observed GRR service line lead levels and site-specific conditions in their water system. One commenter provided sampling data from GRR service lines in its system showing lead levels similar to non-lead lines in that system to demonstrate the lower risk of lead release of GRR service lines. The EPA disagrees that galvanized service lines that were ever downstream of an LSL stop being a risk of lead exposure after any period of time. In the proposed LCRI, the EPA referenced a study showing that galvanized service lines downstream of LSLs could trigger lead releases over the remaining pipe lifetime depending on the depth of the lead scales in the pipes (McFadden et al., 2011). Thus, even low lead levels measured during a GRR service line's lifetime may not indicate the end of a public health risk, and future water quality changes or disturbances could still cause release of lead. These lead particulate releases may not be captured by tap sampling referenced by the commenter. Therefore, the EPA is finalizing the requirements for this definition to include galvanized service lines that were ever downstream of an LSL, regardless of how long ago the LSL may have been replaced.

The EPA recognizes that some systems may lack records demonstrating there never was an upstream LSL. The final LCRI includes these galvanized service lines in the definition of an GRR service line due to the importance of ensuring all GRR service lines are replaced. While this may result in the replacement of some galvanized service lines that were never downstream of an LSL, this broad approach ensures that all GRR service lines, which can contribute significant lead into drinking water, are replaced as quickly as feasible. In this scenario, the final LCRI's definition of GRR service lines include these service lines as GRR to ensure these potentially significant lead sources are not left out of the system's service line replacement program. The EPA expects that as water systems' inventories improve, they may gain additional information that can help identify which GRR service lines were never downstream of an LSL, avoiding the costs to replace galvanized service lines that were never downstream of an LSL. The LCRR Inventory Guidance recommends that water systems treat the inventory as a ''living dataset that is continuously improved over time as the inventory is updated'' (USEPA, 2022c). As water systems gain experience with their inventory and utilize additional methods to categorize service line materials, such as predictive modeling, water systems may be able to better distinguish between galvanized service lines that are GRR service lines and those which are non-lead.

The EPA disagrees that galvanized service lines with upstream lead connectors should be classified as GRR service lines. While any source of lead, including lead connectors, can potentially contribute lead which can adsorb onto downstream galvanized service lines, the final rule's service line replacement requirements are designed to prioritize replacement of the most significant contributors of lead into drinking water (*i.e.,* LSLs and GRR service lines) as quickly as feasible. Galvanized service lines downstream of an LSL, which may be tens of feet long, are likely to contribute more lead into drinking water than a galvanized line downstream of a lead connector, which the final rule defines as no greater than three feet in length. Additionally, the proposed rule notes that the poor condition of galvanized lines may result in these pipes breaking or bursting during construction following re-pressurization after main replacement or replacement of a service line or connector, necessitating replacement of the entire service line. Replacing galvanized service lines downstream of a lead connector (including replacing the lead connector as encountered) in conjunction with other infrastructure work, as opposed to replacing them as part of the system's mandatory service line replacement program in the LCRI, would not only allow systems to prioritize removing the most significant lead sources (*i.e.,* LSLs and GRR service lines) as quickly as feasible, it would also facilitate a more cost-efficient approach to update drinking water

infrastructure that would allow more resources to be devoted to replacement of lead and GRR service lines.

The EPA is revising the proposed definition of ''wide-mouth bottles.'' While the proposed definition used outer diameter to specify the minimum mouth width, commenters noted that inner diameter is the more typical specification. Commenters also raised concerns about the supply and commercial availability of bottles using the proposed 55-millimeter outer diameter threshold and colored or tinted bottles, the latter which some water systems use to better distinguish between the first- and fifth-liter samples from the second, third, and fourth liters for sampling at LSL sites. The EPA agrees with multiple commenters' recommendations for the EPA to use the inner-diameter and to reduce the size to 40 millimeters. The final rule's definition includes a reduced inner-diameter mouth width of 40 millimeters. This revision addresses commenters' concerns about using more common diameter specifications as well as concerns about adequate bottle availability while maintaining sufficient width for sample collection at full flow when lead is most likely to be detected.

One commenter also noted that the proposed rule retained the 2021 LCRR definition for ''first draw sample;'' however, under the proposed LCRI, the phrase ''first draw'' is found in just one portion of the regulatory language, under § 141.92(f)(2)(i), and that in all other locations where ''first draw'' is used in the 2021 LCRR, the term ''first draw'' is replaced with ''first-liter.'' The commenter recommended that the EPA delete the definition for ''first draw sample'' and provide a definition for ''first-liter sample'' instead. The EPA agrees with the commenter and, therefore, made this change for the final LCRI, adding that it would improve rule implementation and be consistent with having a definition which specifies ''fifth-liter sample.''

c. Final Rule Requirements

For the final rule, the EPA is making several revisions to the proposed definitions proposed for § 141.2. The EPA is revising the proposed definition of ''service line'' to include pipes which are not connected to water mains, as service lines may be connected to other conduits for distributing water to individual consumers or groups of consumers (*e.g.,* a direct connection from a well to a single building). The EPA is increasing the proposed defined connector length from two to three feet. The EPA is also revising the proposed definition of ''wide-mouth bottle'' to reduce the diameter from 55 millimeters to 40 millimeters, and to specify that the diameter refers to the inner diameter.

The EPA is maintaining the following new or updated definitions from the proposed LCRI: ''action level,'' ''child care facility,'' ''Distribution System and Site Assessment,'' ''galvanized requiring replacement service line,'' ''lead service line,'' ''lead status unknown service line,'' ''newly regulated public water system,'' ''partial service line replacement,'' ''small water system,'' ''tap monitoring period,'' and ''tap sampling period.''

The EPA is also maintaining proposed minor revisions to the following definitions: ''elementary school,'' ''galvanized service line,'' ''pitcher filter,'' ''secondary school,'' ''medium-size water system'' (revised as ''medium water system''), ''optimal corrosion control treatment,'' ''tap sampling protocol,'' and ''system without corrosion control treatment.'' The final rule eliminates the following definitions: ''find-and-fix,'' ''full service line replacement,'' ''gooseneck, pigtail, or connector,'' ''partial lead service line replacement,'' ''lead trigger level,'' and ''tap sample monitoring period.''

In the final LCRI, the EPA is adding a new definition for ''first-liter sample'' and eliminating the definition for ''first draw sample.'' The definitions are worded slightly differently but similarly reference the first one-liter sample of tap water collected in accordance with the rule's required tap sampling protocol.

V. Rule Implementation and Enforcement

A. General

1. Rationale and Proposed Requirements

The United States Environmental Protection Agency (EPA) proposed requirements to the National Primary Drinking Water Regulation (NPDWR) for lead and copper to improve its oversight and enforcement. For example, the EPA proposed to eliminate the trigger level, (see section IV.F.4 of this preamble), simplify the small system flexibility provision (see section IV.I.1 of this preamble), streamline public education following elevated lead measurements (see section IV.J.2 of this preamble), increase reporting by both States (see section V.D of this preamble) and systems (see section IV.N of this preamble), and require enhanced sampling for detecting corrosion control issues in lead service line (LSL) systems (see section IV.L.1 of this preamble). The EPA intends to develop guidance and support materials to support implementation and enforcement of the Lead and Copper Rule Improvements (LCRI). The agency has already developed materials and technical assistance to support service line inventory and lead service line replacement (LSLR) including guidance on service line inventories. Additionally, the EPA has launched several technical assistance programs specifically to assist with LSLR, including the Lead Service Line Replacement (LSLR) Accelerators and the Get the Lead Out (GLO) Initiative.

2. Summary of Comments and the EPA's Response

Commenters expressed general concern that the proposed rule placed additional workload burden on States and that more resources in the form of funding, staffing, and time would be needed to effectively implement the rule. The EPA has estimated the additional costs for States to implement and enforce the rule in the proposed and final rules. See the final LCRI Economic Analysis (USEPA, 2024a) chapter 4, section 4.4 for more information about State costs and chapter 6 of the final LCRI Economic Analysis for the overall costs and benefits of the final rule. The EPA worked to streamline State requirements for the final LCRI wherever possible (see section V.D of this preamble for a discussion on reporting and recordkeeping). While States will have additional responsibilities under the final LCRI compared to previous versions of the rule, the rule will also provide greater health risk reduction benefits and thus justifies the associated costs (see chapter 3, section 6.3 of the final LCRI Economic Analysis). See section III.G of this preamble for information on available funding sources to support implementation of the LCRI requirements.

Commenters also expressed concerns that the additional burdens on States would be compounded by additional burdens associated with the EPA's final NPDWR for six per- and polyfluoroalkyl substance (PFAS), which had yet to be finalized at the time the comment period was open for the LCRI. The EPA notes that Safe Drinking Water Act (SDWA) section 1412(b)(3)(C)(i)(III) requires that the agency consider the costs and benefits that will result solely a result of compliance with the proposed rule and not resulting from other proposed or final regulations. Therefore, the EPA did not include costs and benefits associated with the PFAS rule in the final LCRI Economic Analysis. However, the agency did consider the costs to States and regulated water systems of implementing the new PFAS rule in the

Economic Analysis for the PFAS NPDWR (USEPA, 2024f, Section 5).

Commenters noted that the complexity of the reporting and recordkeeping requirements on both States and systems in the LCRI require an appropriate data system to manage the data requirements of the LCRI. Some commenters also specifically mentioned the need for updates to the Safe Drinking Water Information System (SDWIS) to match the reporting requirements of the LCRI. Commenters also expressed a concern that these updates would not be possible in time for LCRI implementation. The EPA remains committed to providing high quality tools to assist States with their implementation of the LCRI. The EPA intends to support states' data management needs through both SDWIS/State and the development of Drinking Water State Federal Tribal Information Exchange System (DW SFTIES). The EPA intends to have SDWIS State available for State use by the compliance date of the LCRI. The EPA is currently developing the DW SFTIES, which is an updated system that will replace SDWIS. The EPA will also work closely with State program and information technology staff on LCRI needs for DW SFTIES development. The EPA intends to provide LCRI Data Entry Instructions, which will provide detailed guidance to States regarding the LCRI monitoring, recordkeeping, and reporting requirements.

Commenters recommended that the EPA strengthen reporting requirements to increase enforcement of the LCRI provisions. Some commenters noted the LCRI must have timely and transparent reporting requirements to ensure compliance. For the final rule, the EPA carefully considered all reporting requirements to ensure that the required reporting elements provide value to the State and/or the EPA for oversight or enforcement, and do not create unnecessary burdens. (See section IV.N of this preamble for discussion on reporting and recordkeeping requirements of the final LCRI.) Commenters suggested that the LCRI should require direct electronic reporting of sample results from labs and/or systems to a database shared by the EPA and the States. The EPA requires reporting by the States to submit quarterly and annual reports in a format prescribed by the agency in § 142.15(a). At this time, States use SDWIS/Fed to meet these reporting requirements. While the EPA does not require direct electronic reporting of sample results from systems, the EPA recently promulgated the Consumer Confidence Report (CCR) Rule Revisions to require States to submit compliance monitoring data to the EPA (89 FR 45980, USEPA 2024c).

3. Implementation and Enforcement of the Final Rule

The final rule will provide for improved oversight and enforcement of the NPDWR for lead and copper relative to the Lead and Copper Rule (LCR) and 2021 Lead and Copper Rule Revisions (LCRR). The EPA intends to develop and provide guidance and tools to support rule implementation. The EPA provides water technical assistance (WaterTA) which supports communities to build technical, financial, and managerial capacity that results in more communities with applications for Federal funding, quality water infrastructure, and reliable water services. The EPA has also launched the GLO Initiative in light of the ongoing success of the LSLR Accelerator pilot to expand LSLR technical assistance to communities across the country. The EPA additionally outlines funding that can be used for LCRI implementation such as through the Drinking Water State Revolving Fund (DWSRF), Reducing Lead in Drinking Water grants, the Water Infrastructure Finance and Innovation Act (WIFIA) program, and other Federal and State funding opportunities (see section III.G of this preamble).

B. What are the rule compliance dates?

1. Rationale and Proposed LCRI Revisions

In the LCRR review notification published on December 17, 2021, the agency stated its intention to propose revisions to the 2021 LCRR compliance deadlines ''only for components of the rule that the Agency will propose to significantly revise'' (86 FR 71580, USEPA, 2021b) in the LCRI. In the proposed LCRI, the EPA proposed to replace most of the 2021 LCRR with the LCRI and proposed to require certain 2021 LCRR requirements to apply between the 2021 LCRR's October 16, 2024, compliance date and the final LCRI compliance date.

The EPA proposed a compliance date of three years after the promulgation of the final LCRI and proposed for water systems to continue to comply with the LCR (§§ 141.80 through 141.91) until that date, except for the 2021 LCRR's initial LSL inventory, notification of service line material, and the associated reporting requirements. The EPA also stated that the agency was not changing the compliance date for the Tier 1 public notification (PN) requirement for a lead action level exceedance under subpart Q that was introduced under the 2021 LCRR, and that systems must comply with that provision starting October 16, 2024. The EPA did not propose to change the compliance date of the revisions to 40 CFR part 141, subpart O, that were included under the 2021 LCRR. With these noted exceptions, the EPA proposed a direct transition from the LCR to the LCRI for all rule provisions so that States and water systems could focus their resources on preparing and updating service line inventories and conducting Tier 1 PNs following lead action level exceedances, in addition to preparing for LCRI requirements, such as preparing their service line replacement plan (88 FR 84967, USEPA, 2023a).

The EPA requested comment on these proposed compliance dates and also whether it is practicable for water systems to implement any of the proposed LCRI requirements sooner than three years from the date the LCRI is finalized. Specifically, the EPA requested comment on whether water systems should be required to conduct the risk mitigation measures after full and partial service line replacement and service line disturbances and related reporting requirements (§§ 141.84(h), 141.85(g), and 141.90(e)(6) and (f)(6) of the proposed LCRI). The EPA received a range of comments on these issues including requests for both earlier and later LCRI compliance dates.

2. Summary of Public Comments and the EPA's Response

a. Requirements for Water Systems Between October 16, 2024, and the LCRI Compliance Date

The EPA received comments supporting the EPA's proposal to have water systems continue to comply with the requirements of the LCR, except for the few requirements introduced in the 2021 LCRR that the EPA proposed to maintain, until the LCRI compliance date. According to commenters, complying with requirements introduced in the 2021 LCRR that the EPA proposed to replace in the LCRI would not be an appropriate use of resources and could distract water systems from preparing to comply with the LCRI. Commenters stated that the EPA should delay the compliance date for submitting the initial inventory to provide water systems more time to accurately identify service line material according to the EPA guidance. Several commenters also requested that EPA clarify the compliance dates for the LSLR and tap sampling plans and the

compliance tap sampling requirements introduced in the 2021 LCRR.

The EPA also received comments from water systems and utility organizations asking the agency to delay the provisions that water systems will not be required to comply with starting on October 16, 2024, by at least one year, prior to finalizing the LCRI. The commenters stated that until the final LCRI is promulgated, water systems will assume they are required to comply with all the requirements of the 2021 LCRR starting October 16, 2024, and may invest time and resources on requirements that may be revised in the final LCRI.

The EPA notes the broad commenter support for requiring water systems to transition directly from the LCR to the LCRI. Commenters cited wasted time and resources complying with parts of the LCRR that will be replaced with the LCRI instead of preparing for implementation of the LCRI. The EPA agrees that water systems should continue to comply with the pre-2021 LCR until the LCRI compliance date, with the exceptions identified in § 141.80(a) (*i.e.,* the initial LSL inventory, notification of service line material, and the associated reporting requirements, and Tier 1 PN following a lead action level exceedance). The EPA is finalizing significant changes relative to the 2021 LCRR meaning that many requirements in the 2021 LCRR will be rendered obsolete upon the LCRI compliance date. For example, in the final LCRI, the EPA is removing the lead trigger level and many of the associated actions that are required after a trigger level exceedance, including reporting to States, which could demand significant resources. Additionally, as discussed in the proposed rule, many of the 2021 LCRR requirements are interrelated, so changes to one rule area impact other areas (see 88 FR 84967–84968, USEPA, 2023a). Accordingly, the EPA is not requiring water systems to comply with requirements under the 2021 LCRR that will be replaced under the final LCRI prior to the LCRI compliance date, because of the significant level of effort required of water systems to plan for compliance with the LCRI, as well as the complexity of the 2021 LCRR. Because of the limited time and resources available to water systems and States, their time and resources are better spent complying with the specifically identified 2021 LCRR requirements with a compliance date of October 16, 2024 (as noted above), preparing to implement the final LCRI, and voluntarily replacing LSLs ahead of the LCRI compliance date using resources that are currently available, such as the Bipartisan Infrastructure Law (BIL) funding. Requiring water systems and States to implement the 2021 LCRR in its entirety between October 16, 2024, and the compliance date of the LCRI would waste these limited resources and compromise the ability of systems and States to effectively implement the LCRI, and thereby delay the greater public health benefits associated with implementation of the LCRI. For example, by focusing States' and systems' efforts on establishing service line replacement programs rather than implementing 2021 LCRR provisions that have been changed or eliminated, the LCRI will result in systems removing more lead and galvanized requiring replacement (GRR) service lines, which, where LSLs are present, they are the most significant source of drinking water lead exposure.

The EPA is maintaining the October 16, 2024, compliance date for selected requirements first promulgated in the 2021 LCRR rulemaking that the agency is not significantly revising in the final LCRI. Some minor changes were made to ensure consistency across requirements. In the final rule, the EPA is correcting the citations in § 141.80(a)(4)(i) for the reporting requirements associated with notifications of a known or potential LSL as codified on July 1, 2023 (§ 141.90(e)(13) and (f)(4)). Additionally, for the final LCRI, the EPA is not requiring water systems to comply with § 141.84(a)(6) as codified on July 1, 2023. This requirement references submitting an updated inventory to the State in accordance with § 141.90(e)(3) and requires water systems to update the publicly available inventory no less frequently than the required updates to the State. The requirement in § 141.90(e)(3) as promulgated in the 2021 LCRR ties the timing of submission of the inventory to the State to the applicable tap monitoring frequency. Under the LCRI, systems are required to prepare and submit the baseline inventory by the compliance date of the LCRI, and all systems will be required to update that inventory on an annual basis (§§ 141.84(b)(1) and 141.90(e)(4)). Implementation of a requirement to update the LCRR inventory based on monitoring schedules for only the three years before the LCRI compliance date would be challenging for States and systems to manage while also preparing the updated initial inventory to comply with the LCRI. Many systems are on reduced monitoring and therefore, many systems would only submit an update once, if at all during those three years. For example, water systems that do not monitor between submitting an initial inventory and the LCRI compliance date would not be required to submit an updated inventory, or water systems who are on triennial monitoring would only be required to submit an update once. Additionally, water systems will be preparing to submit the LCRI baseline inventory by the LCRI compliance date, and submission of updates to the 2021 LCRR initial inventory would likely distract from that effort. State resources are best directed towards the LCRI baseline inventory and service line replacement. Additionally, not requiring an annual update of the 2021 LCRR inventory until the LCRI compliance date would not decrease public health protection in the short-term. The EPA notes that between October 16, 2024, and the LCRI compliance date, water systems are required to identify and track service line materials in the inventory on an ongoing basis (§ 141.84(a)(5) as codified on July 1, 2023) and comply with the public education requirement to notify persons served by a lead, GRR, or unknown service line. Because these requirements will remain applicable prior to the LCRI compliance date, public health protection will not be diminished by the EPA not requiring water systems to submit an updated version of the 2021 LCRR initial service line inventory to the State prior to the LCRI compliance date. The EPA encourages water systems to continue to identify unknown service lines and conduct replacements prior to the LCRI compliance date while developing the LCRI baseline inventory. Water systems that update their initial LCRR inventory during this interim period to identify the material of any unknown service lines will reduce their burden if any of the lines are non-lead because they would no longer be required to provide annual notification of service line material to persons served by that service line.

The EPA is not changing the October 16, 2024, compliance date for Tier 1 PN following a lead action level exceedance for the reasons provided in the LCRI proposal (88 FR 84968, USEPA, 2023a). Between October 16, 2024, and the LCRI compliance date, water systems are required to conduct Tier 1 PN following an exceedance of the lead pre-LCRI action level of 0.015 mg/L. The EPA notes that the compliance date for the new lead action level of 0.010 mg/L is three years from the date the final LCRI is published. In the final LCRI, the EPA is retaining the October 16, 2024, date for additional associated provisions, such as the use of the mandatory health

effects language in § 141.85(a)(1)(ii) as introduced in the 2021 LCRR starting October 16, 2024. This change will ensure consistency in messaging between the Tier 1 PN notices after a lead action level exceedance and any public education materials that are distributed prior to the LCRI compliance date. The EPA also notes that systems must comply with the reporting requirements in § 141.31(d)(2) as codified on July 1, 2023, which requires the water system to provide a copy of the Tier 1 notice for a lead action level exceedance to the Administrator and to the head of the primacy agency as soon as practicable, but not later than 24 hours after the system learns of the exceedance. However, in the final LCRI, the EPA is requiring water systems to continue to comply with § 141.31(d) as codified on July 1, 2020, between October 16, 2024, and the LCRI compliance date. This is to correct an error introduced in the 2021 LCRR that inadvertently removed the requirement for water systems to submit a representative copy of other types of Tier 1 notices to the State when certifying the system has complied with the notice requirements. See section IV.O.2 of this preamble for further discussion. Additionally, in the final LCRI, the EPA is also retaining the October 16, 2024, compliance date for the reporting requirement in § 141.90(h)(3) as codified on July 1, 2023. This provision requires States to provide the results of the 90th percentile lead and copper calculations, in writing, to the water system within 15 days of the end of the tap sampling period in instances where the State calculates the water system's 90th percentile level. The EPA is maintaining the October 16, 2024, compliance date for this provision in the final LCRI to facilitate timely compliance with the Tier 1 PN requirement for a lead action level exceedance.

In the final LCRI, the EPA is also adding specific citations in § 141.80(a)(4)(i) to identify which requirements apply during the time period between October 16, 2024, and the LCRI compliance date that relate to the provisions discussed in the proposal. For example, the EPA is clarifying that between October 16, 2024 and the LCRI compliance date water systems must comply with the definitions in § 141.2 as codified on July 1, 2020, that correspond to the requirements in §§ 141.80 through 141.91 as codified on July 1, 2020. See section V.B.3, § 141.80(a)(4), and section II.C of this preamble for additional information.

The EPA disagrees with commenters who indicate that the agency should change the compliance date for submitting the initial inventory. Water systems and States are aware of and should be prepared to meet this deadline. The EPA provided *Guidance for Developing and Maintaining a Service Line Inventory* in August 2022 (USEPA, 2023n). The EPA's December 17, 2021, **Federal Register** notification on the review of the LCRR and the December 6, 2023, proposed LCRI specifically stating that the agency expected systems to submit an initial inventory by October 16, 2024 (86 FR 71574, 71579, USEPA, 2021b; 88 FR 84968, USEPA, 2023a). Inventories are critical to support lead reduction efforts because they help systems identify the location of lead and GRR service lines, allow customers to know if they are served by those lines, and evaluate the extent of these sources in the drinking water system. With the inventory, water systems will be able to conduct the required notification of persons served by a lead, GRR, or unknown service line and provide them with steps they can take to reduce their lead exposure. Additionally, the inventory is integral to help water systems take actions that will facilitate compliance with the LCRI: identify sampling locations; determine the extent of lead and GRR service lines within their systems; plan for service line replacement, including applying for grants and loans; and replace lead and GRR service lines.

The EPA also disagrees with commenters requesting that the agency formally delay the 2021 LCRR requirements prior to the final LCRI. Formally delaying the 2021 LCRR prior to the final LCRI is unnecessary because the final LCRI largely replaces provisions in the 2021 LCRR in this action. Additionally, a delay of the 2021 LCRR requirements would have required a separate rulemaking and diverted agency resources from other actions, including finalizing the LCRI. It is also unnecessary because the final LCRI largely replaces the 2021 LCRR in this action. The EPA disagrees that water systems must assume they must comply with the 2021 LCRR starting October 16, 2024. The EPA recognizes the uncertainty caused by the LCRI rulemaking, but also notes the agency's efforts to help water systems and States make informed decisions in light of the uncertainty. For example, in the December 17, 2021, **Federal Register** notification, the agency stated it did not intend to change the compliance dates for the initial service line inventory, notification of service line material, or the Tier 1 PN notice for a lead ALE. Similarly, the EPA stated that the agency ''also expects to propose to delay the October 16, 2024, deadline for submitting LSLR and tap sampling plans so that systems can incorporate any potential revisions made through the LCRI rulemaking'' (82 FR 71580, USEPA, 2021b). The EPA provided additional clarity in the proposed LCRI by proposing for water systems to continue to comply with the LCR between October 16, 2024, and the LCRI compliance date, with limited exceptions. Additionally, on April 17, 2024, the EPA released a fact sheet and frequently asked questions document on the 2021 LCRR compliance and encouraged water systems to focus resources on complying with the provisions introduced in the 2021 LCRR for which EPA did not intend to change the October 16, 2024, compliance date (USEPA, 2024g; USEPA, 2024h).

b. LCRI Compliance Date

The EPA received comments supporting the agency's proposal for setting the LCRI rule compliance date three years after the rule is finalized, noting the complexity of the rule and need for time to prepare to implement the requirements. Some of these commenters stated that it is not practicable to set compliance dates for any LCRI requirements earlier than three years. The EPA also received comment that the agency should provide an additional nationwide two-year extension to the LCRI compliance date as provided under SDWA section 1412(b)(10). The comment indicated the extension would be for capital improvements in the form of LSLR. Conversely, some commenters stated that some of the LCRI requirements do not substantially differ from the 2021 LCRR requirements and requested that the EPA set earlier compliance dates for the LCRI for some or all of the requirements (*e.g.,* no later than one year after rule publication). These commenters stated that a faster compliance schedule would maximize public health benefits and better align with Federal funding sources currently available to assist water systems.

Section 1412(b)(10) of SDWA provides that NPDWRs shall take effect three years after promulgation ''unless the Administrator determines that an earlier date is practicable.'' The EPA agrees with commenters that the complexity of the LCRI and time needed to prepare to implement the final rule support a compliance date three years from the date the rule is promulgated. Providing water systems three years from the date the LCRI is finalized

provides the amount of time necessary for States to work with water systems to prepare to comply with the final LCRI requirements, which includes revisions to most of the provisions introduced in the 2021 LCRR. The EPA disagrees with commenters that indicate one year is sufficient. The LCRI is complex and while some aspects may have similarities with 2021 LCRR requirements, it is different and water systems will need time to plan for and implement these changes. For example, new requirements for tap sampling, changes in tap sampling schedules for many water systems, a lower lead action level and the actions prompted by that level, including corrosion control treatment (CCT) requirements and new requirements for multiple ALEs, will require significant water system and State resources to prepare to implement. Furthermore, these requirements are all highly interrelated, and therefore setting different compliance dates for different provisions would increase rule complexity further, create implementation challenges, and may lead to widespread non-compliance (88 FR 84969, USEPA, 2023a).

Specifically, one of the key features of the LCRI is for all water systems to identify and replace all lead and GRR service lines as quickly as feasible, regardless of system lead levels. While some systems are voluntarily initiating service line replacement programs due to historic funding provided under the BIL, many systems have not or are not currently conducting service line replacement. Many systems have not been required to conduct LSLR under the LCR and may not have experience developing replacement programs. Water systems and States have noted the potential challenges of implementing replacement programs effectively, including availability of equipment and supplies, difficulty securing funding, and hiring crews to complete replacements. The EPA is working with States and water systems to demonstrate best practices for overcoming or mitigating these challenges through the technical assistance initiatives, Lead Service Line Replacement Accelerators (USEPA, 2023c) and the Get the Lead Out (GLO) Initiative (USEPA, 2024e). The three-year period after promulgation of the final LCRI is for systems to plan for compliance, including hiring additional staff, soliciting bids for contractors, securing grants or other types of funding, and continuing to improve inventories to ensure that they are better positioned to conduct mandatory service line replacement. It would also provide time for the market to correct for potential shortages in resources or workers.

Additionally, the EPA is concerned that not providing water systems enough time to prepare to implement these requirements could undermine their efficacy. For example, as discussed in section IV.B of this preamble, water systems must be prepared to conduct a variety of actions that if not adequately prepared for, may result in fewer service line replacements. The EPA anticipates that water systems will use the three-year period prior to the LCRI compliance date to identify unknowns, develop their service line replacement plan, identify barriers to full service line replacement, and develop outreach materials that are intended to support full service line replacement. Additionally, an earlier compliance date for all the other LCRI requirements besides mandatory LSLR would divert resources from planning for mandatory service line replacement and may delay a system's ability to start replacing lead and GRR service lines.

The EPA also disagrees with providing a nationwide two-year extension to the compliance date under SDWA section 1412(b)(10). As described in section II.C of this preamble, in accordance with SDWA section 1412(b)(10), the Administrator, or a State (in the case of an individual system), may allow up to two additional years to comply with a treatment technique if the Administrator or State (in the case of an individual system) determines that additional time is necessary for capital improvements. Where a State, or the EPA where it has primacy, chooses to provide such an extension, the system would have up to five years from the rule's promulgation date to begin compliance with the treatment technique. The EPA has not determined that an additional two years is necessary for water systems nationwide to make capital improvements to begin compliance with the LCRI. Systems have been subject to more stringent requirements for LSLR and CCT since the promulgation for the 2021 LCRR that allowed time to prepare and obtain funding for any necessary capital improvements. Moreover, there is significant funding available through the BIL and other sources for LSL identification and replacement. The EPA has also been working with States to provide extensive technical assistance to water systems to replace LSLs. Additionally, as noted above, the EPA is providing water systems three years before the LCRI compliance date to identify unknowns and prepare for service line replacement, which may include voluntarily replacing lead and GRR service lines. The EPA has determined that a cumulative average 10 percent per year replacement schedule is feasible in the LCRI and provides deferred deadline options for some systems (section IV.B.8). Furthermore, the commenter does not indicate why an additional two years is necessary for capital improvements in the form of LSLR to comply with the requirements of the LCRI.

c. Early Implementation of LCRI Risk Mitigation Provisions

The EPA requested comment on whether the agency should require water systems to comply with the LCRI requirements for risk mitigation after a full or partial service line replacement, service line disturbances, and associated reporting upon the effective date of the LCRI. Commenters supported such a requirement citing the similarity of the LCRI requirements to those first introduced in the 2021 LCRR and the value of providing health protective measures sooner while water systems are conducting service line replacement. Others disagreed on the grounds that it would be impracticable to implement these requirements upon the effective date of the LCRI. Some commenters supported voluntary implementation of the provisions prior to the LCRI compliance date.

The EPA agrees that a compliance date earlier than three years after promulgation is not practicable and therefore, implementation of the LCRI risk mitigation requirements prior to that date should be voluntary. As noted in the proposal, while the EPA expects that earlier implementation of these actions would reduce lead exposure, setting an earlier implementation date for these select LCRI requirements would result in systems complying with a mix of requirements across three versions of the CFR (*i.e.,* as amended by LCR, LCRR, and LCRI). The EPA is concerned about this complexity and that it could divert resources away from preparing to comply with the other LCRI requirements. In addition, water systems would not likely have time to prepare to implement this requirement by October 16, 2024, the 2021 LCRR compliance date. As described above, setting an implementation date between October 16, 2024 and the LCRI compliance date would introduce confusion and complexity for implementation, reporting, and recordkeeping. The EPA strongly encourages water systems to voluntarily implement these provisions as best practices prior to the LCRI compliance date. The EPA's May 1, 2024 memorandum ''Implementing Lead

Service Line Replacement Projects Funded by the Drinking Water State Revolving Fund'' details the risk mitigation measures, including follow-up tap sampling, point-of-use devices and pitcher filters, that are eligible under the DWSRF funding (USEPA, 2024i). Additionally, States can require water systems to implement these provisions early.

3. Final Rule Requirements

For the final LCRI, the EPA is setting the compliance dates for the LCRI revisions to 40 CFR 141.2 and 141.31 and subparts I, Q, and O of part 141 to three years after the publication date of this final rule in the **Federal Register** (see section II.C of this preamble).

The EPA is also specifying provisions as codified in the CFR on July 1, 2020, and on July 1, 2023, that water systems must comply with between October 16, 2024, and the LCRI compliance date, in accordance with § 141.80(a)(4)(i).

Beginning on October 16, 2024, water systems are required to comply with the requirements of §§ 141.2, 141.31(d), and 141.80 through 141.91 as codified on July 1, 2020. In addition, water systems will also be required to comply with the provisions listed in Exhibit 3 as codified on July 1, 2023.

EXHIBIT 3—REQUIREMENTS INTRODUCED IN THE 2021 LCRR THAT WATER SYSTEMS MUST COMPLY WITH BETWEEN OCTOBER 16, 2024, AND THE LCRI COMPLIANCE DATE

Citation (CFR codified July 1, 2023)	Description
§ 141.84(a)(1) through (10) (excluding paragraphs (a)(6) and (7)).	Initial public service line inventory development.
§ 141.90(e)(1)	Submission of initial inventory to the State.
§ 141.85(e)	Initial and annual notification of known or potential service line containing lead.
§ 141.85(a)(1)(ii)	Revised lead health effects language.
§ 141.90(e)(13) and (f)(4)	Annual reporting and certification of the notifications in § 141.85(e) to the State.
§ 141.90(h)(3)	State provides results of the 90th percentile lead calculations, in writing, to the water system within 15 days of the end of the tap sampling period (if applicable).
§§ 141.201(a)(3)(vi) and 141.202(a)(10)	Tier 1 PN for exceedance of the lead action level as specified in § 141.80(c).[1]
§§ 141.201(c)(3) and 141.31(d)(2)	Submit copy of Tier 1 PN for a lead action level exceedance to the head of the primacy agency and the EPA administrator no later than 24 hours after the system learns of the exceedance.
40 CFR part 141, appendix A to subpart Q, section I.C.1 (excluding § 141.90, except paragraphs (e)(1) and (13) and (f)(4)).	Tier 3 PN required for: failure to notify persons served at service connections of a known or potential service line containing lead and failure to submit initial inventory to the State by October 16, 2024.
40 CFR part 141, appendix B to subpart Q, section D.23	Revised lead health effects language for required PN.

[1] As codified on July 1, 2020.

Additionally, starting October 16, 2024, failure to conduct the reporting requirements in Exhibit 3 (*i.e.,* § 141.90(e)(1) and (13) and (f)(4)) require Tier 3 PN in accordance with 40 CFR part 141, appendix A to subpart Q. Tier 3 PN for failure to conduct other requirements in § 141.90 will not begin until the LCRI compliance date associated with those provisions.

The EPA notes that the CCR requirements in 40 CFR part 141, subpart O, that were revised under the 2021 LCRR rulemaking also have a compliance date of October 16, 2024, in accordance with § 141.152(a). The one exception is the requirement for water systems to notify consumers in the CCR that complete lead tap sampling data are available for review and include information on how to access the data (§ 141.153(d)(4)(xii) as codified July 1, 2023, and renumbered to § 141.153(h)(8)(i) in the final CCR Rule (89 FR 45980, USEPA, 2024c)), which has a compliance date of three years after the publication of the LCRI. This is because the current requirements for tap sampling and calculating the 90th percentile are subject to the LCRI compliance date. The compliance date for systems to notify the public that this data is publicly available should not be earlier than the compliance date for the data collection to avoid administrative complications of these piecemeal implementation of these related provisions.

C. State Primacy and Special Primacy Requirements

1. Rationale and Proposed LCRI Revisions

SDWA authorizes the EPA to promulgate and enforce NPDWRs (SDWA section 1412 and 1414). States that have been approved by the EPA for primary enforcement authority may also enforce drinking water standards under State law. SDWA section 1413 and the EPA's implementing regulations set forth the requirements that primacy agencies (States) must meet to obtain and maintain primary enforcement responsibility (primacy) for its public water systems (PWSs). These include: (1) adopting drinking water regulations that are no less stringent than Federal NPDWRs under section 1412(a) and 1412(b) of SDWA, as well as the CCR Rule and the PN Rule under section 1414 of SDWA; (2) adopting and implementing adequate procedures for enforcement; (3) keeping records and making reports available on activities that the EPA requires by regulation; (4) issuing variances and exemptions (if allowed by the State) under conditions no less stringent than allowed by SDWA sections 1415 and 1416; and (5) adopting and being capable of implementing an adequate plan for the provision of safe drinking water under emergency situations. The regulations in 40 CFR part 142 set out the specific program implementation requirements for States, Tribes, and Territories to obtain and maintain primacy for the Public Water System Supervision (PWSS) Program, as authorized under section 1413 of the SDWA.

PWSs in these primacy States must then comply with both sets of State and Federal regulations, although in practice, PWSs would only comply with the more stringent of the two regulations. Generally, primacy States monitor compliance with regulations; however, the EPA can also take enforcement actions against water systems for failure to comply with NPDWRs. The EPA conducts annual reviews of State programs and can also withdraw primacy under certain circumstances (see § 142.17).

Under § 142.12(b), all primacy agencies are required to submit a revised program to the EPA for approval within two years of promulgation of the final LCRI or request an extension of up to two years in certain circumstances. In order to be granted an extension, a primacy agency will be required to meet certain requirements as deemed appropriate by the EPA on a case-by-case basis to ensure adequate implementation and enforcement of the LCRI until the program revision is approved. To be approved for a program revision, primacy agencies are required to adopt revisions at least as stringent as the revised LCR, CCR, and PN lead-related provisions. To obtain primacy for this rule, primacy applications must address the general requirements specified in subpart B of part 142. The EPA proposed special primacy requirements for the lead and copper NPDWR (§ 142.16(d)), to ensure compliance with the revised State requirements described in the LCRI.

To retain primary enforcement authority, States must adopt revisions at least as stringent as the provisions in 40 CFR part 141, subpart I (Control of Lead and Copper); §§ 141.153, 141.154, 141.201, and 141.202; appendix A to subpart O of part 141 ([Consumer Confidence Report] Regulated Contaminants); appendix A to subpart Q of part 141 (NPDWR Violations and Other Situations Requiring Public Notice); and appendix B to subpart Q of part 141 (Standard Health Effects Language for Public Notification).

In the proposed LCRI, the EPA proposed revising the existing special primacy requirements by modifying some, and establishing new, special primacy requirements for States as a condition of primacy. The EPA proposed to eliminate the special primacy requirement related to systems' goal-based service line replacement programs, given the proposed LCRI requirement for mandatory service line replacement. The EPA also proposed a new special primacy requirement that States would be required to identify State laws, including statutes and constitutional provisions, relevant to a water system's ability to obtain access to conduct a full service line replacement and notify water systems in writing whether such laws exist or not. States would be required to provide this notification by the compliance date and within six months of the enactment of new or revised State law that pertains to access. The purpose of this requirement is to ensure States are informing systems about requirements under State law and provide consistent interpretation of State law across the State. The State is the appropriate entity to compile this information because many systems are unlikely to have expertise to make these interpretation determinations. Consistent interpretation of laws regarding access is important because mandatory full service line replacement of lead and GRR service lines is an important component of the LCRI to protect public health to the extent feasible and compliance should be enforced uniformly within States.

Under the 2021 LCRR, like the 1991 LCR, States must determine if a greater mandatory LSLR rate is feasible and to notify the system of its determination in writing. The EPA proposed to modify this to require States to set a shortened deadline at any time throughout a system replacement program if the State determines a shorter deadline is feasible. The EPA also proposed requiring States to establish an appropriate deadline to complete inventory validation when they determine a shortened deadline is feasible. The purpose of these requirements is to ensure that States are meeting their responsibilities to make determinations on whether a faster mandatory LSLR rate is feasible. State oversight of the service line replacement rate is essential because lead and GRR service lines are a major source of lead in drinking water so increasing the replacement rate when feasible will have significant public health benefits.

The EPA also proposed modifications to special primacy requirements under the LCRI with respect to the requirement for States to set a deadline for systems to prepare an updated inventory where they find discrepancies in their inventory. The 2021 LCRR only requires States to set this deadline where water systems identify an LSL that was categorized as non-lead in the inventory. In the LCRI, the EPA proposed inclusion of GRRs because these are included in the proposed service line replacement requirements and may also be improperly identified. In addition, the EPA proposed inclusion of lead connectors in the inventory and requiring systems that have inventories with no lead connectors and no unknown connectors to update their inventory if a lead connector is found. Therefore, the EPA proposed a requirement for States to set a deadline for systems to prepare an updated inventory in these cases.

The EPA also proposed, related to monitoring for lead in schools and child care facilities, requiring States to describe how the State will determine if an alternative lead sampling program is as ''stringent as the Federal requirements'' including how the State will use the definitions of elementary schools, secondary schools, and child care facilities as defined in § 141.2 to issue waivers. The EPA also proposed that States describe how they will meet the requirement to review the lists of schools and child care facilities submitted by CWSs to ensure entries conform to the definitions of school and child care facility in § 141.2, and that States would be required to ensure that the list of schools and child care facilities is complete. Prior to proposal, the EPA received questions about the LCRR requirement for States to define schools and child care facilities. The EPA is aware that the types of facilities that meet the definition of child care facility under § 141.2 may differ among States (*e.g.,* which facilities are licensed by the State). However, it is not the EPA's intention for States to develop new definitions for schools and child care facilities for purposes of complying with the new rule. In LCRI, the EPA proposed the definition of ''child care facility.''

The EPA proposed requiring that States verify that systems have complied with follow-up requirements following a single site sampled above the action level. Under the 2021 LCRR, this requirement was part of ''find-and-fix''. In the proposed LCRI, this requirement was relabeled as Distribution System and Site Assessment (see section IV.H of this preamble). This change was proposed to be consistent with the terminology in the rest of the LCRI and is not a substantive change in requirements from the 2021 LCRR.

2. Summary of Public Comments and the EPA's Response

a. Identifying State Laws Pertaining to Access

The EPA received comments both in favor of and against the special primacy requirement in § 142.16(d)(8) for States to identify State laws, including statutes and constitutional provisions, that pertain to a water system's access to conduct full service line replacement and to notify water systems in writing whether any such laws exist or not. Commenters against this provision stated that individual systems should be responsible for determining which laws, statutes, or constitutional provisions apply to their system and that there would be additional State burden associated with this research. Commenters in favor of this provision felt that it would be a benefit to systems to have access to this information. The EPA retained this requirement in the final rule because while the EPA acknowledges that this provision will

require additional effort by States, there is value and efficiency in having the State provide consistent information to all systems in the State. In addition, States are better positioned to interpret State laws or statutes than individual water systems. Neither the proposed nor final rule require States to identify specific local laws relevant to a water system's ability to obtain access to conduct a full service line replacement.

b. Setting Shortened Replacement Deadlines

In the proposal, the EPA requested comment on whether States, as a condition of primacy, or the EPA when it is directly implementing the program, should be required to set initial shortened service line replacement deadlines by a certain timeframe, such as no later than 60 days after the compliance date. Many commenters responded to this request for comment by saying that shortened deadlines are not feasible and that States should not have the authority to set shortened deadlines. (See section IV.B.7 of this preamble for more information about the EPA's determination to require States to evaluate shortened replacement deadlines.) Those who commented on defining the timeframe for the decision about shortened deadlines were split on the need to establish a specific timeframe for the State's decision. Some supported a shorter timeframe, citing the need to establish shortened deadlines quickly for faster public health protection and to establish predictability for systems. Some supported longer timeframes or no timeframes at all, citing the State burden of evaluating complex information for multiple systems simultaneously before reaching a conclusion. For systems that are not eligible for deferred deadlines, the EPA decided not to include a specific timeframe for State decisions on shortened service line replacement deadlines in the final LCRI because the conditions for which a system may be able to replace at a faster rate may change throughout the replacement program. Therefore, the LCRI language in § 141.84(d)(5)(v) requires the State to make a shortened deadline determination at any time throughout a system's replacement program when a State determines a shorter deadline is feasible, which would include within 60 days of the compliance date. This would address the burden concerns expressed by some commenters by not requiring States to review all replacement programs at the same time, but also provide the flexibility to make shortened deadline decisions as early as possible to enhance public health and provide predictability for systems. This also allows States to use information obtained during the replacement period through inventory investigations that may inform the State's decision to require a shorter deadline. The EPA intends to develop guidance to assist States in making shortened deadline determinations. For systems that are eligible for deferred deadlines, the EPA included specific deadlines for State decisions on whether the deferred deadline and associated replacement rate identified by the system is the fastest feasible. Specifically, States are required under § 141.84(d)(5)(vi)(C) to make determinations as soon as practicable, but no later than the end of the second program year and every three years thereafter. This is not expected to significantly impact State burden because of the small number of systems that will be eligible for deferred deadlines. (See section IV.B.8 of this preamble for more information on State requirements for making these determinations and the public health value of these provisions.)

c. Deferred Deadlines

The EPA requested comment on whether to require the State, as a condition of primacy, to approve the use of the deferred deadline provision where the water system qualifies for it and/or whether to require the State to assess whether it would be feasible for a system to meet the 10-year deadline or a shorter deadline even if the system meets the regulatory criteria for the deferred deadline. The EPA received mixed comments in response to this request. Some commenters favored requiring States to approve the use of the deferred deadline provisions and not permitting States to set shorter deadlines for systems that qualify and apply for deferred deadlines, as described in § 141.84(d)(5)(vi). These commenters stated that this placed additional burden on States and that systems could be subject to arbitrary decisions by States about deferred deadlines. Other commenters stated that States should always be required to assess whether systems that meet the requirements of § 141.84(d)(5)(vi) could meet the standard 10-year deadline and therefore a special primacy condition is appropriate because extremely long timeframes for replacement could put people at risk for much longer than necessary.

The EPA agrees that due to the urgency to complete lead and GRR service line replacement as quickly as feasible, States should be required to regularly evaluate whether shorter deadlines are feasible for systems eligible for a deferred deadline. The LCRI maintains the proposed requirement for States to set a shortened deadline at any time throughout a system replacement program if the State determines a shorter deadline is feasible. The final LCRI also contains new provisions that require States to evaluate, as soon as practicable, but no later than the end of the second program year and every three years thereafter, and either approve the continued use of the deferred deadline and replacement rate as the fastest feasible for the system, or set a shorter deferred deadline and identify an associated replacement rate to ensure the system is replacing service lines at the fastest feasible rate for the system (see section IV.B.8 of this preamble). The LCRI requires States to determine whether the system's recommended deferred deadline and associated cumulative average replacement rate are the fastest feasible to conduct mandatory service line replacement. In addition, the EPA cannot preclude a State from adopting or enforcing more stringent requirements, consistent with other SDWA regulations.

d. Translation Support

In the preamble for the proposal, the EPA requested comment on ''Whether the Agency should require States, as a condition of primacy, to provide translation support to water systems that are unable to do so for public education materials to consumers with limited English proficiency.'' (See section IV.J.3.g of this preamble for the EPA's response to these comments.) The EPA elected to include a special primacy requirement to require States to provide technical assistance to systems in meeting the requirement to provide translation assistance to consumers with limited English proficiency. The EPA selected this approach because it is consistent with the approach in the Final CCR Rule Revisions (89 FR 45980, USEPA, 2024c).

3. Final Rule Requirements

The EPA retained the proposed special primacy requirements, with minor editorial revisions for clarity, to ensure effective oversight and implementation of the LCRI by States. In addition to finalizing the proposed items, the EPA made minor adjustments to include provisions that implement other requirements of the LCRI as described below. State primacy requirements are located in § 142.16(d).

The EPA included § 142.16(d)(9) in the final LCRI, which requires, as a condition of primacy, States to make

determinations about systems eligible for deferred deadlines, including determining if the deferred deadline is the fastest feasible or whether a faster deadline is feasible, and reporting the results of these determinations to the EPA. This requirement is necessary to implement State requirements in §§ 141.84(d)(5)(vi) and 142.15(c)(4)(iii)(H). The EPA intends to issue guidance to assist States in making determinations on the fastest feasible deadlines for service line replacement. For more information on the changes to the deferred deadlines provisions, please see section IV.B.8 of this preamble.

The EPA included a special primacy requirement in § 142.16(d)(5)(ii) for States to provide or require the review of inventory validation efforts, including making determinations on whether previous validation efforts are at least as stringent as the requirements and providing written approval to the system, and requiring additional actions for systems based on the results of the inventory validations. This requirement is necessary to implement State requirements in § 141.84(b)(5).

The EPA also included a special primacy requirement in § 142.16(d)(10) to require States, as a condition of primacy, to make determinations about which water systems serve a large proportion of consumers with limited English proficiency and provide technical assistance to these systems in meeting the requirement to provide translation assistance in these communities. This requirement is necessary to implement State requirements in § 141.85(b)(1).

D. State Reporting and Recordkeeping Requirements

1. State Recordkeeping Requirements

a. Rationale and Proposed LCRI Revisions

State recordkeeping provisions are essential elements of the LCRI because they ensure that States and the EPA have the data and information they need in order to ensure effective implementation and enforcement of the rule. State recordkeeping requirements are located in § 142.14 of the final rule.

The EPA proposed several changes to State recordkeeping requirements to conform with changes proposed elsewhere in the proposed LCRI. Because the EPA proposed eliminating the trigger level and requiring mandatory full service line replacement, the EPA also proposed removing recordkeeping requirements for any State determinations of LSLR goal rates. The EPA proposed changing instances of LSLR to ''service line replacement'' and ''lead and galvanized requiring replacement service lines'' to reflect the proposed mandatory full service line replacement requirements of both lead and GRR service lines. The EPA also proposed clarifying that the requirement in § 142.14(d)(8)(ix) for States to maintain records of system-specific determinations for some NTNCWSs and CWSs to collect non-first draw samples refers to samples that do not meet the minimum six-hour stagnation time.

The EPA also proposed clarifying existing requirements regarding the length of the records retention period. The EPA requires each State with primacy enforcement responsibility to retain records listed under § 142.14(d) for not less than 12 years. States must maintain records of all currently applicable or most recent State determinations, including all supporting information and technical basis for each decision, under § 142.14(d)(8). Revisions to the LCR in 2000 added a requirement that if no change is made to the State determinations under § 142.14(d)(8) during the 12-year retention period, that the State must retain the record until a new decision, determination, or designation has been issued. The EPA proposed revising § 142.14(d)(8) in the LCRI to clarify the existing record retention requirement and improve implementation. The EPA also proposed changing the order of provisions in § 142.14(d)(8) to improve readability.

The EPA also proposed moving requirements for States to maintain records of service line replacement plans, service line inventories, and compliance sampling pools to § 142.14(d)(9) with other reports and information submitted under § 141.90. The EPA proposed this change to improve organization and clarity because these records are not State determinations. Because the EPA proposed requiring systems to complete a baseline service line material inventory by the rule compliance date, the EPA also proposed requiring that States maintain records on these baseline inventories in addition to the initial service line inventory and any required updates to the inventory.

b. Summary of Public Comments and the EPA's Response

In the proposal, the EPA requested comment on whether States should be required to maintain records related to Distribution System and Site Assessments (DSSA) conducted by water systems. Some commenters stated that this information would be valuable to States and therefore should be maintained. Other commenters stated that retaining this information would cause additional burdens for States with no additional benefit. Some commenters not in favor of State maintenance of records indicated that systems should be required to maintain the information and make it available to the State upon request. Some commenters also expressed concern that the data systems that are used to store State data may not be set up to store this information. The EPA agrees with commenters concerned about the burden of such a requirement for States to maintain records on DSSAs and therefore is not adding a requirement to do so in the final LCRI. The EPA also received general comments about State burden and agrees that adding such a requirement would increase the overall burden of the LCRI on States. The EPA does not want to create additional unnecessary burden on the States so they can focus on implementing the requirements of the LCRI that have important direct public health benefits such as LSLR, CCT, and public education, among other things. The EPA notes that States will be receiving DSSA information from systems as required in § 141.90(g)(1) and that the final rule (§ 142.14(d)(8)) requires the State to retain all currently applicable or most recent State determinations, including supporting information, for all decisions regarding the LCRI. To the extent that DSSA information was used in State decision making, it must be retained under this provision. Should States need information on DSSA sites they can request this information from the water system.

In the proposal, the EPA requested comment on ''whether States should be required to maintain documentation of determinations of more stringent implementation, including but not limited to conditions or approvals related to reduced compliance monitoring and additional information required to conduct a review or designate OCCT.'' Some commenters stated support for maintaining this information, while other commenters did not. One commenter stated that the provisions of § 142.14(a) and (d)(8) require States to maintain records on which their decisions are made, so a specific requirement on more stringent implementation would be redundant. The EPA agrees that the requirements in this request for comment would be redundant based on § 142.14(d)(8) and therefore has not made any additions to the final LCRI regulatory text that require maintaining this type of documentation.

c. Final Rule Requirements

State recordkeeping requirements found in § 142.14(d)(8) through (10) in the proposal were all finalized without substantive changes from the proposal. Minor revisions to these sections in the final LCRI include updates for clarification and organizational purposes. Additional revisions were made to match revisions in other sections of the final rule with corresponding revisions or to correct references to other sections of the rule.

The final LCRI adds § 142.14(d)(8)(v), which requires State to keep records of designations of optimal water quality parameters (OWQPs), as a technical correction to ensure consistency with § 142.15(c)(4)(iii)(C), which requires States to report this information to the EPA on a quarterly basis. These requirements mirror the requirements for States to designate and review OWQPs under § 141.82(f). This should not require any additional effort by States because States are required to report this information, so they would need to collect it. The rest of the items in § 142.14(d) were renumbered to accommodate this inserted requirement.

The final LCRI also adds § 142.14(d)(8)(ix) to correspond to the addition of a new requirement for additional system reporting and State approvals for systems that are eligible for deferred deadlines provisions in their LSLR program as defined in § 141.84(d)(5)(vi). There is a corresponding State reporting requirement for this information, therefore the States must retain this information. For more information on the revisions to the deferred deadlines provisions, please see section V.B of this preamble.

2. State Reporting Requirements

a. Rationale and Proposed LCRI Revisions

State reporting provisions are essential elements of the LCRI because they ensure that States and the EPA have the data and information they need to ensure effective implementation and enforcement of the rule. State reporting requirements are located in § 142.15 of the finalized rule.

The EPA proposed making two changes to quarterly State reporting to conform with the changes proposed elsewhere in the LCRI. In the 2021 LCRR, States were required to report summary numbers of LSLs, GRR service lines, and unknown service lines, as reported by systems in their mandatory service line inventories. The EPA proposed requiring in the LCRI to expand the inventories to include lead connectors and non-lead service lines and to require States to report totals for these additional categories per system. In the 2021 LCRR, goal-based LSLR was introduced in addition to mandatory LSLR upon an action level exceedance and requires States to report the date that systems must begin LSLR for all systems required to do so. As the LCRI proposed mandatory service line replacement irrespective of measured lead levels, the EPA proposed that States instead report the calculated replacement deadline for each system under either the proposed mandatory 10-year deadline, shortened deadlines, or under proposed options for deferred deadlines. In addition, the EPA proposed requiring States to report the number and type of service lines replaced each year, as reported by systems.

The EPA also proposed consolidating reporting requirements in § 142.15(c)(4)(i) and (iii). Under LCRR, the EPA removed dates differentiating reports submitted by States to the EPA prior to January 1, 2000, and those submitted after January 1, 2002, resulting in some duplicative requirements. Specifically, the EPA proposed maintaining requirements for States to report the date of CCT and source water treatment related milestones (*e.g.,* the date CCT study results are submitted to the State, date of OCCT installation is complete) and removing duplicative requirements such as reporting the systems with action level exceedances given that States are required under LCRI to report the 90th percentile values of all water systems in addition to the first and last days of the tap monitoring period. These reporting elements are necessary for the EPA's enforcement and oversight.

The EPA also proposed changing State reporting to implement section 1414(c)(2)(D) of SDWA, as amended by the Water Infrastructure Improvements for the Nation (WIIN) Act. This provision requires the EPA to issue a Tier 1 PN of a system's lead action level exceedance if a system fails to do so; however, the EPA would need to know of the action level exceedance to conduct the notice. Therefore, the EPA proposed requiring that States submit the 90th percentile lead level for any system with an action level exceedance within 15 days following the end of each applicable tap monitoring period or within 24 hours of receiving notification of a lead action level exceedance from a water system, whichever is earlier.

b. Summary of Public Comments and the EPA's Responses

Commenters expressed general concern that the proposed rule placed additional burden on States and that more resources in the form of funding, staffing and time would be needed by States to effectively implement the rule. The EPA has accounted for costs to States to implement and enforce the rule in the proposed and final rules. While the costs to States have increased in the final rule relative to the currently implemented LCRR provisions, the increase in State burden is needed to ensure the improvements to the LCRI, including increased public health protection, are correctly implemented and enforced. See section VI.D.3 of this preamble for more information about State costs.

Commenters also expressed concerns that the additional burdens on States would be compounded by additional burdens associated with the EPA's final NPDWR for six PFAS. Under the requirements in SDWA section 1412(b)(3)(C), Economic Analyses for NPDWRs must be conducted using the costs and benefits associated with the rule under consideration only and are not permitted to factor in costs or benefits associated with other proposed or final EPA regulations. Therefore, costs and benefits associated with the PFAS rule have not been included in the final LCRI Economic Analysis and it is not appropriate to factor any PFAS burden considerations into the EPA's decision-making on the LCRI. The EPA also notes that while there are new requirements the States must perform in the LCRI and other recent regulations, including PFAS, many of the State requirements for the LCRI are the same or similar to existing regulations. Therefore, States will be in a good position to continue the similar requirements while adapting to the new requirements. States will have three years between the final rule date and the compliance date to prepare for the new requirements.

Commenters expressed that the complexity of the reporting and recordkeeping requirements of the LCRI require an appropriate data system to manage the data requirements of the LCRI. Some commenters also specifically mentioned the need for updates to the Safe Drinking Water Information System (SDWIS) and/or the Drinking Water State Federal Tribal Information Exchange System (DW SFTIES) to match the reporting requirements of the LCRI. Commenters also expressed a concern that these updates would not be possible in time

for LCRI implementation. The EPA remains committed to providing high quality tools to assist States with their implementation of NPDWRs. The EPA intends to support the data management needs of primacy agencies for the LCRI through the Drinking Water State Federal Tribal Information Exchange System (DW SFTIES) development project, and to have a product available for State use by the compliance date of the LCRI. The EPA will work closely with State program and information technology staff on LCRI database needs and on overall SDWIS modernization. The EPA is intending to provide LCRI Data Entry Instructions (DEIs). The LCRI DEIs will provide detailed guidance to primacy agencies regarding the LCRI monitoring, recordkeeping, and reporting requirements.

Commenters recommended that the EPA strengthen reporting requirements to ensure improved enforcement of the LCRI provisions. Some comments suggested that the proposed rule, in their view, lacked timely and transparent reporting needed to assure compliance. The EPA does not agree that the reporting requirements in the LCRI are insufficient to support effective enforcement. The EPA added further reporting requirements to align with new requirements for the final LCRI as described in section IV.N of this preamble. The EPA carefully considered all reporting requirements to ensure that all required reporting elements provided some value to the State and/or the EPA for public health or enforcement. Some commenters suggested that the LCRI should require direct electronic reporting of sample results from labs and/or systems to a database shared by the EPA and the States. The EPA did not include such a requirement because the EPA does not wish to place overly prescriptive requirements on States on how reporting should be done. The EPA acknowledges that in some States, direct electronic reporting may be an option for systems to report to States. However, not all systems and States are set up for this type of reporting therefore it is not appropriate to require it in the LCRI. The EPA notes the LCRI does not prohibit States from setting up direct electronic reporting. In addition, the EPA notes that the recently promulgated Consumer Confidence Rule Revisions include a requirement for States to submit compliance monitoring data annually to EPA for all NPDWRs beginning in 2027, which will improve the EPA's ability to fulfill oversight responsibilities under SDWA, including those associated with the LCRI. Prior to adoption of DW SFTIES, the EPA will facilitate primacy agency reporting to minimize reporting burden. A primacy agency could submit CMD using one of two formats: (1) As a data extract using the EPA's SDWIS State Data Extraction Tool; or (2) As an extracted copy of its database and database documentation (USEPA, 2024c).

Commenters expressed concern with the deadline of 15 days after the sampling period to calculate the 90th percentile and report the results to the EPA. Commenters pointed out that the systems have up to 10 days to submit the results to the State, which means in some circumstances the State would only have five days to perform the analysis necessary to calculate the 90th percentile and report to the EPA. Since the language does not say five business days, it could become even more challenging to meet in cases where a weekend is within the five-day window. The final LCRI retains the 10-day reporting timeframe for systems and the 15-day reporting timeframe for States. The EPA determined that these timeframes are appropriate, and that systems and States will be able to meet these deadlines. The EPA acknowledges that in some cases the States may have a short turnaround time to complete the calculations and the reporting requirement, however, the public health interest in receiving this information in a timely manner is extremely important. When a system has an action level exceedance, there are various actions that systems, States, or the EPA must take in order to alert the public to the potential risks to their health. Section 1414(c)(2)(D) of SDWA, as amended by the WIIN Act, requires the EPA to issue a Tier 1 PN (a 24-hour notification) of a system's lead action level exceedance if a system fails to do so. The EPA would need to know of the action level exceedance to conduct the notice. Given the public health interest in issuing the Tier 1 notice in a timely manner, in cases where the EPA is issuing the notice, the EPA must be made aware in an appropriate timeframe.

c. Final Rule Requirements

The EPA finalized proposed State reporting requirements found in § 142.15(c)(4)(iii)(B) through (G) without substantive changes from the proposal. The agency made minor adjustments from the proposal for clarification and organizational purposes. The EPA made additional revisions to align with revisions in other sections of the final rule with corresponding revisions or to correct references to other sections of the rule.

The EPA made a technical correction to the Reports by States section (§ 142.15). Specifically, the agency added language to the introductory paragraph (§ 142.15(c)(4)) to clarify that the requirement for States to report the 90th percentile calculation for systems that exceed the action level to the EPA is not a quarterly requirement as originally stated in the introduction. In the proposal, this language was not consistent with the language in § 142.15(c)(4)(iii)(G) in the proposal and final rule, which requires 15 days of the end of the tap sampling period.

The EPA added new State reporting requirements in § 142.15(c)(4)(iii)(H). These new requirements correspond to new State requirements in § 141.84(d)(5)(vi) to review service line replacement plans for those systems that are eligible for deferred deadlines and make determinations as to whether a shortened deferred deadline is feasible. Under this provision, States are required to report the result of the State's determination as to whether the deferred deadline is the fastest feasible, the deadline at the fastest feasible rate, and the reasons for the State's decision. For more information on the changes to the deferred deadlines provisions, please see section IV.B.8 of this preamble.

VI. Economic Analysis

This section summarizes the final Lead and Copper Rule Improvements (LCRI) Economic Analysis supporting document (USEPA, 2024a), which was prepared in compliance with Safe Drinking Water Act (SDWA) section 1412(b)(3)(C). This analysis is commonly called the Health Risk Reduction Cost Analysis (HRRCA). SDWA section 1412(b)(3)(C)(i) lists the analytical elements of the required HRRCA as follows: (1) quantifiable and non-quantifiable health risk reduction benefits; (2) quantifiable and non-quantifiable health risk reduction benefits from reductions in co-occurring contaminants; (3) quantifiable and non-quantifiable costs that are likely to occur solely as a result of compliance; (4) incremental costs and benefits of rule options; (5) effects of the contaminant on the general population and sensitive subpopulations including infants, children, pregnant women, the elderly, and individuals with a history of serious illness; (6) any increased health risks that may occur as a result of compliance, including risks associated with co-occurring contaminants; and (7) other relevant factors such as uncertainties in the analysis and factors with respect to the degree and nature of the risk.

Based on this final LCRI HRRCA analysis, the United States

Environmental Protection Agency (EPA) Administrator reaffirms the finding made at proposal, under SDWA section 1412(b)(4)(C), that the estimated quantified and non-quantifiable benefits of the regulation justify the quantified and non-quantifiable costs.

In this analysis, the EPA assumes that the LCRI National Primary Drinking Water Regulation (NPDWR) will be promulgated in 2024. The agency estimated the year or years in which all costs and benefits accrue over a 35-year period of analysis. The 35-year window was selected to capture costs associated with rule implementation as well as water systems conducting service line replacement and installing and operating optimal corrosion control treatment (OCCT). The EPA accounts for the Illinois, New Jersey, Michigan, and Rhode Island State-required service line replacement programs in the regulatory analysis baseline, so that the estimated final LCRI cost will not double count the service line replacement costs already required by States.

The EPA annualized the estimated future streams of costs and benefits that accrue from compliance activities occurring over this same period of analysis symmetrically. The EPA does not capture the effects of compliance with the final LCRI after the end of the period of analysis, although, the agency does account for benefits that continue to accrue in the future from compliance activities that occur during the 35-year window. Costs and benefits are presented as annualized values in 2022 dollars. The EPA determined the present value of these costs and benefits using a discount rate of two percent as prescribed by the Office of Management and Budget (OMB) Circular A–4 (OMB, 2023).

Estimated benefits, in terms of health risk reduction from the final LCRI, result from the activities performed by water systems, which are expected to reduce risk to the public from exposure to lead and copper in drinking water at the tap. The EPA quantifies and monetizes some of this health risk reduction from lead exposure by estimating the decrease in lead exposures accruing to both children and adults from the installation and re-optimization of OCCT, service line replacement, the implementation of point-of-use filter devices, and the provision of pitcher filters in systems with multiple action level exceedances and by quantifying and monetizing the resulting increases in intelligence quotient (IQ) in children zero to seven years old, and reductions in incidents of low birth weight, attention-deficit/hyperactivity disorder (ADHD) in children, and adult cardiovascular disease premature mortality.

A. Summary of Public Comments and the EPA's Response

The EPA published an economic analysis for the proposed rule in accordance with SDWA section 1412(b)(3)(C) (USEPA, 2023q). The proposed rule Economic Analysis and the appendices to the proposed rule Economic Analysis can be found in the rule docket, under the document ID number EPA–HQ–OW–2022–0801–0712. The EPA requested comment, information, and data on all aspects of the proposed rulemaking including the Economic Analysis.

The EPA received comments and data submissions. As a result of the new information submitted by commenters and additional data obtained by the EPA in response to comments, the agency has improved the estimates of costs and benefits for the final rule.

Commenters indicated that the EPA should be using a two percent discount rate when calculating the annualized social costs and benefits of the LCRI, not the three and seven percent rates used in the proposed rule analysis. The EPA agrees with the commenters and notes that the U.S. White House and OMB recently finalized and re-issued the A–4 benefit-cost analysis guidance (OMB, 2023), and the update includes new guidance to use a social discount rate of two percent. The updated OMB Circular A–4 states that the discount rate should equal the real (inflation-adjusted) rate of return on long-term U.S. government debt which provides an approximation of the social rate of time preference. For the LCRI, the OMB Circular A–4 does not require the agency to follow the updated guidance for this final rulemaking; however, the guidance does encourage ''to the extent feasible and appropriate, as determined in consultation with OMB, agencies should follow this Circular's guidance earlier than these effective dates.'' Given the OMB's statement encouraging early implementation of the Circular A–4 guidance and public input received on the discount rates considered by the EPA in the proposed LCRI, for this final rule, the EPA estimated national benefits and costs at the two percent discount rate and incorporated those results into the final LCRI Economic Analysis (USEPA, 2024a). Because the EPA provided cost estimates discounted at three and seven percent for the proposed LCRI based on OMB guidance, which was in effect at the time of the proposed rule analysis (OMB, 2003), the agency has also calculated the cost impacts at both the three and seven percent discount rates. See the final LCRI Economic Analysis (USEPA, 2024a), appendix F for results.

Commenters requested that the EPA should show the costs of the LCRI over each year of the period of analysis. The EPA agrees that having information on the distribution of cost over the course of the period of analysis can be useful in understanding impacts to regulated entities. Providing this information is also consistent with OMB Circular A–4 (OMB, 2023) guidance. See the final LCRI Economic Analysis (USEPA, 2024a), chapter 6, section 6.3 for the undiscounted annual costs and benefits of the final LCRI.

Commenters suggested that the agency should include the social cost of the incremental greenhouse gas emissions that might result from compliance with the final LCRI. The EPA disagrees with commenters that SDWA requires the EPA to quantify and consider the climate disbenefits associated with GHG emission increases from this final rule in the HRRCA. The HRRCA requirements of SDWA 1412 (b)(3)(C)(i)(III) require the agency to analyze ''quantifiable and nonquantifiable costs . . . that are likely to occur solely as a result of compliance with the maximum contaminant level''. Therefore, the EPA considered as part of its HRRCA analysis the compliance costs to facilities, including the costs to purchase electricity for the operation of OCCT at drinking water treatment facilities and fuel costs for the use of construction and transport vehicles in the replacement of lead and galvanized requiring replacement (GRR) service lines. Also, the agency did not include in the HRRCA analysis the climate disbenefits from GHG emissions associated with producing the electricity needed to operate CCT and the combustion of the fuel used in the replacement of service lines because these impacts do not qualify as compliance costs to public water systems (PWSs).

The EPA is committed to understanding and addressing climate change impacts in carrying out the agency's mission of protecting human health and the environment. While the EPA is not required by SDWA 1412(b)(3)(C) to consider climate disbenefits under the HRRCA the agency has estimated the potential climate disbenefits from the operation of OCCT at drinking water treatment facilities and the use of construction and transport vehicles in the replacement of lead and galvanized requiring replacement (GRR) service lines. The EPA's final rule is based on the EPA's record-based analysis of the

statutory factors in SDWA 1412(b), and this disbenefits analysis is presented solely for the purpose of complying with the directives in E.O. 12866 (Regulatory Planning and Review). OMB Circular A–4 states ''[l]ike other benefits and costs, an effort should be made to quantify and monetize additional effects when feasible and appropriate'' (OMB, 2023). The scope of the monetized climate disbenefits analysis is limited to the climate impacts associated with the incremental GHG emissions from the operation of OCCT at drinking water treatment facilities and the use of construction and transport vehicles in the replacement of lead and galvanized requiring replacement (GRR) service lines required under the final LCRI. See section VI.E.10 of this preamble for a summary of the EPA's assessment of the final rule's incremental greenhouse gas emissions, and see chapter 5, section 5.9 of the final LCRI Economic Analysis (USEPA, 2024a) for additional detail on the analysis.

Commenters raised a number of points associated with the general concept that the EPA should consider, in this LCRI rulemaking, including the potential financial impacts to affected drinking water systems of the LCRI, other ongoing capital management obligations, Clean Water Act (CWA) compliance obligations (for combined sewer and drinking water systems), climate change related expenditures, and a number of other regulations proposed by the EPA. One of the commenters highlighted the proposed per- and polyfluoroalkyl substances (PFAS) NPDWR, which since the closure of the LCRI proposed rule comment period was finalized on April 10, 2024, indicating that overlapping compliance schedules will create affordability issues. A commenter also indicated that the agency should consider the percentages of systems likely to make treatment changes due to PFAS NPDWR maximum contaminant level (MCL) exceedances and how that would impact the costs associated with LCRI requirements. The other proposed rules mentioned by commenters were the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substance designation, the Stage 3 Microbial and Disinfection Byproducts NPDWR rulemaking, and the CWA designated use and water quality criteria rulemaking for the Delaware River. Commentors indicated that the EPA cannot impose a cumulative regulatory burden on communities that is not economically sustainable or leads to inadequate resources for other key public health protections. In response, the EPA notes that the HRRCA, required by SDWA, excludes costs that result from compliance with other regulations. Specifically, SDWA section 1412(b)(3)(C)(i)(III) requires that the EPA include quantifiable and non-quantifiable costs that are likely to occur solely as a result of compliance with the rule including monitoring, treatment, and other costs and excluding costs resulting from compliance with other proposed or promulgated regulations. The agency also notes that the impact from other non-NPDWR regulations (*e.g.,* CWA water quality standards), aging water infrastructure, and non-revenue water control are not part of the evaluation of routine compliance in drinking water regulations and, thus, are not accounted for in the EPA's cost analysis. Nonetheless, the EPA has not identified any other drinking water regulations or requirements that will inhibit compliance with the final LCRI, nor should the final LCRI regulation significantly impair compliance with other regulations (*e.g.,* installing a treatment technology to comply with the PFAS NPDWR MCLs does not inhibit a system from taking action to meet OCCT requirements under the final LCRI). The potential implementation overlap between the PFAS NPDWR (now final) and the LCRI could potentially result in a large number of public water systems (PWSs) and States facing rule start-up, administrative, and sampling/service line inventory costs associated with both rules within a few years after the promulgation of the rules. Also, the more significant costs of installing and operating OCCT and/or conducting full service line replacement along with installing and operating PFAS treatment technology in a similar time frame are expected to fall on some systems. The EPA does not have sufficiently detailed lead/GRR service line information and 90th percentile lead tap sample data, and PFAS occurrence data to explore the potential treatment cost interactions of the two rules. However, it is feasible for water systems to comply with both regulations by taking appropriate mitigating actions, potentially similar to the ones outlined in the PFAS NPDWR Best Available Technologies (BAT) and Small Systems Compliance Technologies (SSCT) Support Document (see the PFAS BAT/SSCT Support Document, USEPA 2024j) to address the impacts that PFAS treatment may have on CCT. This is especially true in light of increased funding available under the BIL, including $11.7 billion in DWSRF funding that can be used for PFAS treatment and lead service line replacement, $15 billion in dedicated funding for service line replacement, and $9 billion in dedicated funding for emerging contaminants in drinking water, especially PFAS ($4 billion in DWSRF emerging contaminants funds and $5 billion from the Emerging Contaminants in Small or Disadvantaged Communities (EC–SDC) grant program). Note, the EPA reasonably anticipates BIL funding is likely to be able to support a substantial portion of the initial capital costs of the final PFAS rule. (See section 1.5 in the LCRI Response to Comment document and section 2.4 of the PFAS Response to comment document (USEPA, 2024k; USEPA, 2024l).) The EPA also notes that the extended five-year compliance date for meeting the PFAS MCLs may provide implementation flexibility for those systems facing the potential for simultaneous installation of PFAS and OCCT treatment technologies. The EPA acknowledges the potential that operational adjustments may be necessary to adjust the corrosivity of finished water if treatment is installed to meet the PFAS NPDWR MCLs. Ion exchange resins or reverse osmosis, for instance, may make water more corrosive if post-treatment stabilization (*e.g.,* pH adjustment) is not performed. However, the increase in corrosivity is short-lived after an ion exchange media change-out (see the PFAS BAT/SSCT Support Document, USEPA 2024j) and would likely not create the long-term water chemistry issues that would trigger the LCRI study requirements associated with significant treatment changes nor significant adjustment to LCRI corrosion control treatment (CCT). Systems using reverse osmosis would likely need post-treatment stabilization to address corrosivity although as part of the PFAS regulatory analysis the EPA found that it is highly unlikely that drinking water systems would select this technology largely due to the challenges presented by managing the treatment residuals, in fact the final PFAS analysis assumed that no systems would implement reverse osmosis (see chapter 5 of the Economic Analysis for the Final PFAS NPDWR (USEPA, 2024f)). Given this information, the EPA made no changes to its baseline assumptions on existing pH levels in finished water nationally, so the PFAS NPDWR was found to have no quantifiable impact on the final LCRI Economic Analysis modeling, although the EPA acknowledges that it is possible that LCRI CCT costs may be underestimated based on the impact of PFAS treatment.

The EPA received a number of comments indicating that the agency under costed service line replacement. Commenters did not provide adequate rationales or supporting data for altering the agency's proposed rule national level service line replacement cost methodology and estimated cost range. The EPA maintains the 7th Drinking Water Infrastructure Needs Survey and Assessment (DWINSA) survey as the source of service line replacement unit costs. The EPA agrees with commenters that unit costs for service line replacement can vary greatly: the full range of service line replacement unit costs considered in the DWINSA data set is $1,248 to $15,837. A wide range of costs is also cited by CDM Smith (2022) and Betanzo and Speight (2024). The EPA evaluated both its existing and new data, obtained as a result of the public comment process, including the DWINSA dataset, the CDM Smith report (2022), individual service line replacement costs reported by commenters, and the Betanzo and Speight (2024) literature review and engineering cost estimate. Based on the EPA's review, which is provided in appendix A of the final LCRI Economic Analysis (USEPA, 2024a), the EPA maintained the DWINSA as the primary source of data for service line replacement unit cost estimates. The DWINSA collects actual project and asset data from a stratified random statistical sample of water systems, which minimizes bias and uncertainty in the survey and results. No other data source provided detailed project-level data as required by the DWINSA. The DWINSA [12] cost dataset contains responses from small, medium, and large systems and from urban and rural systems, representing 31 water systems in 13 States across EPA Regions 1, 2, 3, 5, 7, and 8 and representing States in the Northeast, the Midwest, and the West. These systems serve populations ranging from 3,000 to over 2,000,000 persons, although the dataset includes more projects for systems serving more than 10,000 persons, which is consistent with the relative prevalence of lead content service lines in these systems. The dataset includes a mix of project types including targeted service line replacement for sensitive subpopulations, replacement of lead pipes and GRR service lines when found, and service line replacement in coordination with water main replacement. The EPA adjusted the DWINSA reported costs to account for regional differences in prices to produce a national average. Each service line replacement cost estimate, from a given system replacement project, is weighted by the DWINSA sample weights, which reflect the probability that each system is included in the sample. Each project was also weighted by the number of service lines included in the project to capture the relative importance of the project cost estimate in comparison with the total dataset. The weighted values were then used to estimate descriptive statistics for the cost of service line replacement per line. Overall, the DWINSA dataset provides the most complete picture of the range of possible service line replacement costs. As described in chapter 4, section 4.2.2.2 of the final LCRI Economic Analysis (USEPA, 2024a), the EPA uses the 25th and 75th percentile values to provide a range of national costs for the final LCRI that reflect the degree of uncertainty in the average service line replacement unit cost ($6,507 and $8,519 for a full service line replacement). The EPA did not use the minimum and maximum values, from the 33 DWINSA reported projects,[13] for this bounding exercise given that applying these figures to 100 percent of service line replacements seemed unreasonably extreme. Using minimum and maximum values would have produced a national estimate range greater than what is warranted given the uncertainty in the distribution of service line replacement unit costs.

A commenter raised concerns that the EPA may be overestimating both baseline and changes in drinking water lead exposure by its use of modeled fifth-liter water lead concentration values (calculated based on the agency's drinking water lead concentration profile data) as a proxy for exposure in the proposed rule benefits analysis. The EPA reassessed its water lead concentration modeling and given recent findings (Urbanic et al., 2022) from the comparison of composite samples, which approximate lead exposure given water use patterns at a residence, and profile samples, where a volume weighted average lead concentration was calculated, at sites in two cities, the agency chose to use a volume weighted average lead concentration calculated using data from the first 10 liters of profile data in approximating exposure at the tap for the final LCRI benefits analysis.

The Association of State Drinking Water Administrators (ASDWA) provided the EPA with an updated LCRI 2024 version of their Costs of States Transactions Study (CoSTS) model which estimated the first five years of total and incremental burden to States for implementing the proposed LCRI. Burden totals from this model were significantly higher for some State oversight activities than those estimated by the EPA for the proposed LCRI. The EPA carefully evaluated the information and assumptions in the updated 2024 CoSTS model and used a subset of the information from the model to assist in the development of revised State burden estimates for the cost analysis of the final rule. The EPA compared the per-activity State burden estimates in the ASDWA 2024 CoSTS model to those included in the proposed rule and to those included in the 2020 CoSTS model, which ASDWA provided as part of the 2021 Lead and Copper Rule Revisions (LCRR) rulemaking, and selected the higher burden estimates for use in the cost estimates for the final rule. The EPA revised cost estimates for a number of State activities including: the review and approval of the small system flexibility option, reviewing initial lead monitoring data and preparing systems for any new requirements under the LCRI, reviewing changes in tap sampling locations, reviewing monitoring results and 90th percentile calculations, reviewing school and child care facility testing program materials, reviewing CCT study data and determining the type of OCCT to be installed, reviewing CCT study data and determining the needed OCCT adjustment, reviewing CCT guidance and its applicability to individual PWSs, consulting on required actions in response to a treatment change, reviewing the filter plan, reviewing annual service line inventory updates, reviewing the annual service line replacement program report, and reviewing copies of consumer notices and certifications. In addition to this list of updated burden variables, several estimates in the ASDWA 2024 CoSTS model were consistent with the proposed rule requiring no update for the final rule analysis. These included the implementation and administration activities, reviewing sample invalidation requests, reviewing water quality parameter (WQP) sampling data and compliance with OWQPs, reviewing source water monitoring results, consulting with the system prior to any Distribution System and Site Assessment CCT adjustments, reviewing the report on Distribution System and Site Assessment responses, reviewing point-of-use public education materials, reviewing the inventory validation

[12] Note 7th DWINSA service line replacement costs data come from 2021 survey effort. The replacement cost data was not targeted for update as part of the additional one-time update that took place in 2023.

[13] Note two systems provided two projects each.

report, reviewing the service line replacement plan, participating in joint communication efforts with local and State health departments, and consulting with community water systems (CWSs) on other public education activities in response to a lead action level exceedance. Overall, the updated burden values will result in higher estimated State and total costs for the final rule when compared to the burden estimates used in the analysis of the proposed rule. See chapter 4 of the final LCRI Economic Analysis for more detail on the information the EPA used from the ASDWA CoSTS models in the adjustment of State cost variables (USEPA, 2024a).

B. Affected Entities and Major Data Sources Used To Develop the Baseline

The entities potentially affected by the final LCRI are PWSs classified as either CWSs or NTNCWSs and primacy agencies (States). In the economic modeling performed, the EPA uses the Safe Drinking Water Information System Fed Data Warehouse (SDWIS/Fed) to derive the number of CWSs and non-transient non-community water systems (NTNCWSs), 49,529 and 17,418, respectively. The agency also assumed, for modeling purposes, 56 primacy agencies.[14]

The EPA used a number of data sources to develop the drinking water industry characterization for the regulatory analysis. Exhibit 4 (Exhibit 3–1 in chapter 3 of the final LCRI Economic Analysis (USEPA, 2024a)) lists the major data sources, describes the data used from each source, and explains how it was used in the estimation of the regulatory analysis baseline, which corresponds to the 2021 LCRR.[15] Additional detailed descriptions of these data sources and how they were used in the characterization of baseline industry conditions can be found in chapter 3 of the final LCRI Economic Analysis (USEPA, 2024a).

EXHIBIT 4—DATA SOURCES USED TO DEVELOP THE BASELINE FOR THE FINAL LCRI

Data source	Baseline data derived from the source
SDWIS/Fed fourth quarter 2020 "frozen" dataset [1]	• PWS inventory, including population served, number of service connections, source water type, and water system type. Also used to identify NTNCWSs that are schools and child care facilities. • Status of CCT, including identification of water systems with CCT and the proportion of water systems serving ≤50,000 persons that installed CCT in response to the pre-2021 LCR. • Analysis of lead 90th percentile concentrations to identify water systems below, at, or above the lead and/or copper action levels at the start of rule implementation by LSL status, *i.e.,* presence or absence of LSLs for the pre-2021 LCR, 2021 LCRR, and LCRI. Used in concert with data from Michigan described below for the LCRI.[2] • The proportion of water systems that are on various reduced monitoring schedules for lead tap and WQP monitoring. • The frequency of source and treatment changes and those source changes that can result in additional source water monitoring. • Number of distribution system entry points per drinking water system for systems that were not included in the UCMR 3 dataset.
2006 CWSS (USEPA, 2009)	• PWS labor rates.
UCMR 3 (2013–2015)	• Number of distribution system entry points per drinking water system.
7th DWINSA and Supplemental One-time Update	• Service line material characterization. • Service line replacement costs.
State service line information	• Service line material characterization.
Geometries and Characteristics of Public Water Systems (USEPA, 2000c).	• Design and average daily flow per system.
Six-Year Review 3 ICR Occurrence Dataset (2006–2011)	• Baseline distribution of pH for various CCT conditions. • Baseline orthophosphate dose for CCT.
State of Michigan Lead and Copper Compliance Monitoring Data (Michigan EGLE, 2019–2021).	• Analysis of the ratio of fifth- to first-liter lead tap samples to estimate the increase in lead 90th percentile levels for LSL systems based on the use of the higher of the first- or fifth-liter sample result. Ratios are applied to SDWIS/Fed system level lead 90th percentile data to identify systems below, at, or above the action level under the final LCRI by LSL status. • Percent of individual samples exceeding 0.010 mg/L for the final LCRI.

Acronyms: AWWA = American Water Works Association; CCT = corrosion control treatment; CWSS = Community Water System Survey; DWINSA = Drinking Water Infrastructure Needs Assessment; ICR = Information Collection Request; LCR = Lead and Copper Rule; LCRR = Lead and Copper Rule Revisions; LCRI = Lead and Copper Rule Improvements; LSL = lead service line; Michigan EGLE = Michigan Department of Environment, Great Lakes, and Energy; NTNCWS = non-transient non-community water system; public water system; SDWIS/Fed = Safe Drinking Water Information System/Federal version; UCMR 3 = Third Unregulated Contaminant Monitoring Rule; USEPA = United States Environmental Protection Agency; WQP = water quality parameter.

Note:

[1] Contains information reported through December 31, 2020.

[2] A system's lead 90th percentile level is a key factor in determining a system's requirements under the pre-2021 LCR, 2021 LCRR, and final LCRI.

[14] The 56 primacy agencies include 49 States (excluding Wyoming), Puerto Rico, Guam, United States Virgin Islands, American Samoa, North Mariana Islands, and Navajo Nation. For cost modeling purposes, the EPA also included the District of Columbia (DC) as a primacy agency when assigning burden and costs of the rule although some of these costs are incurred by the actual primacy agency, EPA Region 3.

[15] Note that the EPA provides an alternative regulatory analysis, which assumes a pre-2021 LCR baseline during the 35-year period of analysis starting in 2024, in appendix C of the final LCRI EA (USEPA, 2024a). Because PWSs and Primacy Agencies will likely not have implemented the parts of the 2021 LCRR associated with compliance dates after October 16, 2024, the agency is providing this alternative baseline analysis that describes LCRI incremental costs and benefits relative to a non-LCRR state of the industry.

C. Overview of the Cost-Benefit Model

The EPA used its SafeWater Lead and Copper Rule (LCR) model to analyze the costs and benefits of the final LCRI. For a detailed description of the model, see chapter 5 of the Economic Analysis for the Final Lead and Copper Rule Revisions (USEPA, 2020d). The EPA originally developed the SafeWater LCR model because of the need to model costs and benefits where significant variability existed in both regulated entity characteristics in the baseline and regulatory compliance scenarios, a fact that remains true of the analysis for the final LCRI. PWSs will face different compliance scenarios depending on the size and type of the water system; the presence of lead, GRR, and unknown service lines; water quality; and existing corrosion controls. In addition, PWSs will also face different unit costs based on water system baseline characteristics including size, type, and number of entry points (*e.g.,* labor rates, and CCT capital and operation and maintenance unit costs).

One of the strengths of the SafeWater LCR model is that it incorporates a large degree of variability across water system baseline characteristics that influence compliance and costs. For example, under the final LCRI, PWSs will face different compliance scenarios and costs depending on their size, primary source water type, number of entry points to the distribution system, number of lead and GRR service lines in their distribution system, and existing in place corrosion controls. The SafeWater LCR model also includes variability in compliance characteristics like different labor rates and the number of tap and WQP samples required by system size.

One limitation of the cost-benefit analysis is that the EPA does not have all of the PWS-specific data needed to fully reflect baseline and compliance variability across PWSs, therefore, the SafeWater LCR model applies a ''model PWS'' approach. From a set of system baseline characteristic data, including system type, system size, and primary water source, the EPA defined 72 PWS categories, or strata, in the SafeWater LCR model. The 72 PWS categories consist of each combination of PWS type (2), PWS population size category (9), PWS primary source water (2), and PWS public/private ownership (2). See the final LCRI Economic Analysis (USEPA, 2024a), chapter 4, section 4.2.1 for more information on model strata.

The SafeWater LCR model creates model PWSs that represent systems in each category by combining the PWS-specific data available in SDWIS/Fed with data on baseline and compliance characteristics available at the PWS category level. When categorical data are point estimates, every model PWS in a category is assigned the same value. When the EPA has probabilistic data representing system variability, the SafeWater LCR model assigns each model PWS a value sampled from the distribution. Examples of the distributional data inputs that characterize variability in the SafeWater LCR model include the burden for PWSs and State staff to conduct tasks like sampling and compliance documentation and review. These distributions are assumed to be independent, which is a limitation of the model.

While the model system approach allows for a good characterization of variability across PWSs, it is less exact than if the EPA had complete information on each PWS. Because of this model PWS approach, the SafeWater LCR model does not output any results at the PWS level, but rather, outputs cost (and benefit) estimates at the PWS category, or strata. For additional information on the data sources used in the estimation of costs see chapter 3 and chapter 4, sections 4.2.2, 4.3, 4.4, and 4.5 of the final LCRI Economic Analysis (USEPA, 2024a).

Chapter 3 of the final LCRI Economic Analysis describes in greater detail the baseline data elements, their derivations, and the inherent sources of uncertainty in the developed data elements (USEPA, 2024a). The EPA estimates the incremental costs and benefits of the final LCRI relative to a baseline, as described in chapter 3, that assumes compliance with the 2021 LCRR and other State regulations requiring lead service line replacement (Illinois, Michigan, New Jersey, and Rhode Island) and tap sampling in schools and child cares (17 States and the District of Columbia) that go beyond the 2021 LCRR requirements. Chapter 4, sections 4.3 and 4.4 of the final LCRI Economic Analysis discuss how each data element is used in the estimation of costs. The chapter also provides examples and references to how these data were developed, and the uncertainty associated with specific data elements. Chapter 5 of the final LCRI Economic Analysis provides detail on the water lead concentrations under the baseline conditions (*e.g.,* presence of a lead service line (LSL) and CCT) and the functions used to quantify benefit categories, their derivations, and the inherent sources of uncertainty associated with the use of those functions (USEPA, 2024a). All significant uncertainties of this economic analysis are described in the following sections of the final LCRI Economic Analysis (USEPA, 2024a). Chapter 3, section 3.4 and Exhibit 3–78 outline uncertainties associated with the analytical baseline and water system compliance characteristics. The SafeWater LCR model and cost uncertainty is discussed in chapter 4, section 4.2.2 and Exhibit 4–2. Also, for a discussion of the uncertainties in the benefits analysis, see chapter 5, section 5.7 and Exhibit 5–41.

The SafeWater LCR model follows each model PWS, which represents a cohort of systems with the same characteristics, in the sample through each year of the period of analysis (35 years) and determines how the PWS will comply with each requirement of the final rule, estimating the yearly compliance cost and tracking the impact of the compliance actions on drinking water lead concentrations and the resultant effects on health outcomes. It also tracks how other events, such as changing a water source or treatment, effect the water system's compliance requirements for the next year. The estimated costs and benefits for each model PWS are weighted, so they represent the number of actual PWSs known to have similar characteristics (*e.g.,* population served, entry points to the distribution system, etc.). Then, the summary statistics are calculated, including total quantified costs of the regulatory requirement, total quantified benefits of the regulatory requirement, the variability in PWS-level costs (*e.g.,* 5th and 95th percentile system costs), and the variability in household-level costs.[16]

This treatment technique rulemaking, and therefore the SafeWater LCR model, is complex, incorporating multiple triggers (*e.g.,* action level exceedance, single sample exceedance, multiple action level exceedances) that require multiple and varying compliance actions (*e.g.,* CCT installation or re-

[16] The exception to the use of model PWSs and the assignment of system characteristics data in the SafeWater LCR model is the 24 very large water systems serving more than one million persons. Because of the small number of water systems in this size category, the uniqueness of their system characteristics, and the potential large impact of these systems on estimated national costs and benefits, the EPA collected information on very large water systems' CCT practices and chemical doses, pH measurements and pH adjustment practices, number of LSLs, service populations, and average annual flow rates for each entry point to the distribution system. When facility-specific data were available, the EPA used them to estimate compliance costs and benefits for the very large water systems. If data were not available, the EPA assigned baseline characteristics using the same process as previously described. See chapter 4, section 4.2.3 of the final LCRI Economic Analysis for a summary of the data the EPA collected on these very large systems (USEPA, 2024a).

optimization, Distribution System and Site Assessment, public education, and temporary filter distribution) that also require a large number of inputs for the estimation of total compliance costs and benefits. Many of these inputs, which are specific to the assessment of the costs and benefits of the final LCRI, are uncertain.

The EPA determined that the agency does not have enough information to perform a probabilistic uncertainty analysis as part of the SafeWater LCR model analysis for this rule. Instead, to capture uncertainty, the EPA estimated compliance costs and benefits using the SafeWater LCR model under low and high bracketing scenarios. For costs, the bracketing scenarios are defined by the following three cost drivers: the number of PWSs that will exceed the action level under the revised tap sampling requirements; the cost of service line replacement; and the cost of CCT. The low and high scenarios for benefits are driven by: the number of PWSs that will exceed the action level under the revised tap sampling requirements (the same variable which is used to define the low and high cost scenarios); the concentration-response functions that characterize how reductions in blood lead levels (caused by changes in lead exposure) translate into estimates of avoided IQ reductions, cases of ADHD, and cardiovascular disease premature mortality; and high and low estimates of the ADHD cost of illness. These low and high scenarios are defined by the assignment of low and high values for the set of cost and benefit drivers listed above. Detailed descriptions of these variables and the derivation of their values under the low and high scenarios can be found in chapters 4 and 5 of the final LCRI Economic Analysis (USEPA, 2024a). Due to the data limitations mentioned above, with the exception of the uncertain variables that define the difference between the low and high scenarios, the remaining baseline water system and compliance characteristics are treated as certain and remain constant across the scenarios. While this limits the full description of the uncertainty in the monetized cost and benefit estimates, it does allow the EPA to clearly define the uncertainty characterized in the cost-benefit range provided by the low and high scenarios and maintains consistency between the estimation of costs and benefits for the baseline (2021 LCRR) and final LCRI (*e.g.,* number of systems with lead and/or GRR service lines and percent of connections that are lead and/or GRR service lines).

When evaluating the economic impacts on PWSs and households, the EPA uses the estimated PWS cost of capital to discount future costs, as this best represents the actual costs of compliance that water systems would incur over time. The EPA used data from the 2006 Community Water System Survey (CWSS) to estimate the PWS cost of capital. The 2006 CWSS is the most recent CWSS available. The EPA calculated the overall weighted average cost of capital (across all funding sources and loan periods) for each size/ownership category, weighted by the percentage of funding from each source. The cost of capital for each CWS size category and ownership category is shown in appendix B of the final LCRI Economic Analysis (USEPA, 2024a). Since similar cost of capital information is not available for NTNCWSs, the EPA used the CWS cost of capital when calculating the annualized cost per NTNCWS. The EPA's estimated total capital cost may be greater than the costs water systems actually bear when complying with the LCRI's regulatory requirements because low or no interest loans and grants are available from State and local governments, EPA programs, and other Federal agencies. See section III.G of this preamble for more information on available funding. The availability of funds from government sources, while potentially reducing the impart of the regulatory costs to individual PWSs, does not reduce the social cost of capital to society, which looks at the total opportunity cost of the capital expenditures.

The EPA projects that rule implementation activities will begin immediately after rule promulgation. These activities will include one-time PWS and State costs for staff to read the LCRI, become familiar with the rule provisions, and develop training materials and train employees on the new rule requirements. States will also incur burden hours associated with adopting the rule into State requirements, updating their LCR program policies and practices, and modifying data management systems. PWSs will incur costs to comply with the service line inventory requirements, service line materials notification requirements, development of the service line replacement plan, updating their lead tap sampling plan and the requirement for public notification following an exceedance of 0.015 mg/L (2021 LCRR lead action level) in years one through three of the 35-year period of analysis. The EPA expects that water systems will begin complying with all other LCRI rule requirements three years after promulgation, or in year four of the analysis.

Some requirements of the final LCRI must be implemented by water systems regardless of their water quality and tap sampling results (*e.g.,* service line inventory updates, service line replacement, and CWS school and child care facility sampling programs). However, other significant cost drivers are a function of a water system's 90th percentile lead tap sample value. Because a water system's lead 90th percentile value is important to determining certain regulatory requirements and costs and benefits under the final LCRI, the SafeWater LCR model tracks each model PWS's 90th percentile value over each annual time step in the model. The 90th percentile value, and if it exceeds the action level, dictates actions including, but not limited to, tap sampling and water quality parameter monitoring schedules, the installation or re-optimization of OCCT, the installation of point-of-use devices or pitcher filters at water systems selecting this treatment option instead of CCT as part of the small system flexibilities under the final LCRI, and certain public education requirements.[17] Under the final LCRI, the SafeWater LCR model assumes a PWS's 90th percentile tap sample values will drop at or below the action level once they: (1) install or re-optimize OCCT; [18] or (2) install point-of-use devices. PWSs that remove all service lines with lead content are also assigned a new 90th percentile tap sample value with a low likelihood of an action level exceedance. When the PWS no longer has a 90th percentile tap sample value above the action level, it incurs lower sampling and public education costs.

The SafeWater LCR model allows for future increases in 90th percentile lead values as a result of changes in source water and treatment. The likelihood of these events occurring has been derived from SDWIS/Fed data (see chapter 3, section 3.3.9 of the final LCRI Economic Analysis (USEPA, 2024a)). When a change in source water or treatment occurs in a modeled year, a new 90th percentile value is assigned to the water system. This value may be higher or lower than the current value, thus potentially triggering new corrective

[17] Distribution System and Site Assessment adjustments to CCT are required for a single lead tap sample exceedance of the action level of 0.010 mg/L. The provision of temporary pitcher filters is triggered by multiple action level exceedances. Both of these compliance requirements are also positively associated with system level 90th percentile tap sample values.

[18] The SafeWater LCR model implements a required systemwide Distribution System and Site Assessment activity as a change in pH which is equivalent to pH adjustments associated with CCT installation or re-optimization in the model.

actions. In the model, if a water system already has ''optimized'' CCT in place, it is assumed that no additional action is needed and that the current treatment is adequate; therefore, the 90th percentile value will not change.

D. Cost Analysis

This section summarizes the cost elements and estimates the total cost of compliance for the baseline (2021 LCRR), the final LCRI, and the incremental cost of the final LCRI, under both the low- and high-cost scenarios, discounted at two percent.[19] The EPA presents the estimated PWS rule costs; the calculated distributions of incremental annualized costs by primary water source and size category for households served by CWSs; and the estimated costs to States for implementation and administration of the rule.[20] This section also quantifies the potential increase in phosphates that would result from the increased use of corrosion inhibitors under the rule, quantifies the resulting cost for treating to remove the additional phosphates at downstream wastewater treatment plants that may be constrained by nutrient discharge limits, and discusses the ecological impacts that may result from increased phosphorus loads to surface waters.

1. Public Water System Costs

The EPA provides estimates of the LCRI regulatory requirement costs that accrue to PWSs for the following cost components: rule implementation and administration, sampling, service line inventory and replacement, CCT, point-of-use program (if a small system selects this compliance option), and public education and outreach. For the purpose of developing the PWS costs for each of these rule components, the EPA further subdivided these groupings into sub-components and activities to be completed by systems implementing the LCRI requirements. For most activities, water systems will incur labor unit costs (*e.g.,* PWS staff participate in training). Systems will also incur unit capital and operation and maintenance costs for a number of activities (*e.g.,* installation of CCT). Exhibit 5 (Exhibit 4–6 in the final LCRI Economic Analysis (USEPA, 2024a)) provides an overview of the rule components, subcomponents, and activities for which the EPA estimates water system unit costs for the rule. Detailed information on the derivation of unit costs associated with each activity can be found in the final LCRI Economic Analysis (USEPA, 2024a) sections identified in Exhibit 5.

EXHIBIT 5—PWS COST COMPONENTS, SUBCOMPONENTS, AND ACTIVITIES ORGANIZED BY SECTION [1]

Component	Subcomponents	Activities [2]
4.3.1: PWS Implementation and Administrative Costs.	4.3.1.1: PWS One-Time Implementation and Administrative Costs.	(a) Read and understand the rule. (b) Assign personnel and resources for rule implementation. (c) Participate in training and technical assistance provided by the State during rule implementation. (d) Provide small system flexibility option recommendation to the State.
4.3.2: PWS Sampling Costs	4.3.2.1: PWS Lead Tap Sampling	(a) Update sampling instructions for lead tap sampling and submit to the State. (b) Contact homes to establish new 100 percent LSL tap sampling pool. (c) Update and submit tap sampling plan to the State. (d) Report any changes in sampling locations to the State. (e) Confer with the State on initial lead sampling data and status under the LCRI. (f) Obtain households for each round of lead tap sampling. (g) Offer incentives to households to encourage participation in lead tap sampling program. (h) Ship tap sampling material and instructions to participating households. (i) Collect lead tap samples. (j) Determine if a sample should be rejected and not analyzed. (k) Analyze lead tap samples in-house or commercially. (l) Prepare and submit sample invalidation request to the State. (m) Inform consumers of tap sample results. (n) Certify to the State that results were reported to consumers. (o) Submit request to renew 9-year monitoring waiver to the State. (p) Submit sampling results and 90th percentile calculation to the State. (q) Oversee the customer-initiated lead sampling program. (r) Ship tap sampling material and instructions to participating households for customer-initiated lead sampling program. (s) Collect lead tap samples for customer-initiated lead sampling program. (t) Analyze lead tap samples in-house or commercially for customer-initiated lead sampling program. (u) Inform customers of lead tap sample results for customer-initiated lead sampling program.
	4.3.2.2: PWS Lead Water Quality Parameter Monitoring.	(v) Collect lead WQP samples from the distribution system. (w) Analyze lead WQP samples from the distribution system.

[19] The EPA is reporting final LCRI social costs using the 2 percent discount rate to be consistent with revised guidance from OMB (OMB Circular A–4, 2023). Because the EPA provided cost estimates discounted at 3 and 7 percent for the proposed LCRI based on OMB guidance which was in effect at the time of the proposed rule analysis (OMB Circular A–4, 2003), the agency has also calculated the cost impacts at both the 3 and 7 percent discount rates. See the final LCRI Economic Analysis (USEPA, 2024a) appendix F for results.

[20] Note that reporting costs are represented in the cost totals provided in the estimates below, but a separate summary of the reporting costs required by the Paperwork Reduction Act can be found in section VII.B of this preamble.

EXHIBIT 5—PWS COST COMPONENTS, SUBCOMPONENTS, AND ACTIVITIES ORGANIZED BY SECTION [1]—Continued

Component	Subcomponents	Activities [2]
		(x) Collect lead WQP samples from entry points.
		(y) Analyze lead WQP samples from entry points.
		(z) Report lead WQP sampling data and compliance with OWQPs to the State.
	4.3.2.3: PWS Copper Water Quality Parameter Monitoring.	(aa) Collect copper WQP samples from the distribution system.
		(bb) Analyze copper WQP samples from the distribution system.
		(cc) Collect copper WQP samples from entry points.
		(dd) Analyze copper WQP samples from entry points.
		(ee) Report copper WQP sampling data and compliance with OWQPs to the State.
	4.3.2.4: PWS Source Water Monitoring.	(ff) Collect source water samples.
		(gg) Analyze source water samples.
		(hh) Report source water monitoring results to the State.
	4.3.2.5.1: CWS School and Child Care Facility Lead Sampling Costs—First Five-Year Cycle.	(ii) Create a list of schools and child care facilities served by CWS and submit to State.
		(jj) Develop lead outreach materials for schools and child care facilities.
		(kk) Prepare and distribute initial letters explaining the sampling program and the EPA's 3Ts Toolkit.
		(ll) Contact elementary school or child care facility to determine and finalize its sampling schedule (one-time) or contact secondary school to offer sampling (annual).
		(mm) Contact school or child care facility to coordinate sample collection logistics.
		(nn) Conduct walkthrough at school or child care facility before the start of sampling.
		(oo) Travel to collect samples.
		(pp) Collect samples.
		(qq) Analyze samples.
		(rr) Provide sampling results to tested facilities.
		(ss) Discuss sampling results with the school or child care facility.
		(tt) Conduct detailed discussion of high sampling results with schools and child care facilities.
		(uu) Report school and child care facility sampling results to the State.
		(vv) Prepare and provide annual report on school and child care facility sampling program to the State.
	4.3.2.5.2: CWS School and Child Care Facility Lead Sampling Costs—Second Five-Year Cycle On.	(ww) Update the list of schools and child care facilities and submit to the State.
		(xx) Contact schools and child care facilities to offer sampling.
		(yy) Contact the school or child care facility to coordinate sample collection logistics.
		(zz) Conduct walkthrough at school or child care facility before the start of sampling.
		(aaa) Travel to collect samples.
		(bbb) Collect samples.
		(ccc) Analyze samples.
		(ddd) Provide sampling results to tested facilities.
		(eee) Discuss sampling results with the school and child care facility.
		(fff) Conduct detailed discussion of high sampling results with schools and child care facilities.
		(ggg) Report school and child care facility sampling results to the State.
		(hhh) Prepare and provide annual report on school and child care facility sampling program to the State.
4.3.3: PWS Corrision Control Costs	4.3.3.1: CCT Installation	(a) Conduct a CCT study.
		(b) Install CCT (PO_4, PO_4 with post treatment, pH adjustment, or modify pH).
	4.3.3.2: Re-optimization of Existing Corrosion Control Treatment.	(c) Revise CCT study.
		(d) Re-optimize existing CCT.
	4.3.3.3: DSSA Costs	(e) Contact customers and collect follow-up tap sample.
		(f) Analyze follow-up lead tap sample.
		(g) Collect distribution system WQP sample.
		(h) Analyze distribution system WQP sample.
		(i) Review incidents of systemwide events and other system conditions.
		(j) Consult with the State prior to making CCT changes.
		(k) Report follow-up sample results and overall DSSA responses to the State.
	4.3.3.4: System Lead CCT Routine Costs.	(l) Review CCT guidance.
		(m) Provide WQP data to the State and discuss during sanitary survey.

EXHIBIT 5—PWS COST COMPONENTS, SUBCOMPONENTS, AND ACTIVITIES ORGANIZED BY SECTION [1]—Continued

Component	Subcomponents	Activities [2]
		(n) Notify and consult with the State on required actions in response to source water change.
		(o) Notify and consult with the State on required actions in response to treatment change.
4.3.4: PWS Service Line Inventory and Replacement Costs.	4.3.4.1: Service Line Inventory	(a) Conduct records review for connector materials.
		(b) Compile and submit connector updated LCRR inventory (baseline inventory) to the State.
		(c) Identify material for unknown service lines.
		(d) Report annual inventory updates to the State.
		(e) Conduct field investigations for inventory validation.
		(f) Report validation results to the State.
	4.3.4.2: Service Line Replacement Plan.	(g) Develop initial service line replacement plan and submit to the State for review.
		(h) Identify funding options for full service line replacements.
		(i) Include information on deferred deadline and associated replacement rate in the service line replacement plan.
		(j) Update service line replacement plan annually or certify no changes.
		(k) Provide an undated recommendation of the deferred deadline and associated replacement rate.
	4.3.4.3: Physical Service Line Replacements.	(l) Systems replace lead and GRR service lines.
	4.3.4.4: Ancillary Service Line Replacement Activities.	(m) Contact customers and conduct site visits prior to service line replacement.
		(n) Deliver filters and 6 months of replacement cartridges at time of service line replacement.
		(o) Collect tap sample post-service line replacement.
		(p) Analyze post-service line replacement tap sample.
		(q) Inform customers of tap sample result.
		(r) Submit annual report on service line replacement program to the State.
4.3.5: PWS POU-Related Costs (Small System Compliance Option).	4.3.5.1: POU Device Installation and Maintenance.	(a) Provide, monitor, and maintain POU devices.
	4.3.5.2: POU Ancillary Activities	(b) Develop POU plan and submit to the State.
		(c) Develop public education materials and submit to the State.
		(d) Print POU education materials.
		(e) Obtain households for POU monitoring.
		(f) Deliver POU monitoring materials and instructions to participating households.
		(g) Collect tap samples after POU installation.
		(h) Determine if sample should be rejected and not analyzed.
		(i) Analyze POU tap samples.
		(j) Prepare and submit sample invalidation request to the State.
		(k) Inform customers of POU tap sample results.
		(l) Certify to the State that POU tap results were reported to customers.
		(m) Prepare and submit annual report on POU program to the State.
4.3.6: PWS Lead Public Education, Outreach, and Notification Costs.	4.3.6.1: Consumer Notice	(a) Develop lead consumer notice materials and submit to the State for review.
		(b) Provide a copy of the consumer notice and certification to the State.
	4.3.6.2: Activities Regardless of Lead 90th Percentile Level.	(c) Update CCR language.
		(d) Develop new customer outreach plan.
		(e) Develop approach for improved public access to lead health-related information and tap sample results.
		(f) Establish a process for public access to information on known or potential lead content service line locations and tap sample results.
		(g) Maintain a process for public access to lead health information, known or potential lead content service line locations, and tap sample results.
		(h) Respond to customer request for known or potential lead content service line information.
		(i) Respond to requests from realtors, home inspectors, and potential home buyers for known or potential lead content service line information.
		(j) Develop a list of local and State health agencies.
		(k) Develop lead outreach materials for local and State health agencies and submit to the State for review.
		(l) Deliver lead outreach materials for local and State health agencies.
		(m) Develop public education materials for known or potential lead content service line disturbances and submit to the State.

EXHIBIT 5—PWS COST COMPONENTS, SUBCOMPONENTS, AND ACTIVITIES ORGANIZED BY SECTION [1]—Continued

Component	Subcomponents	Activities [2]
	4.3.6.3: Public Education Activities in Response to Lead ALE.	(n) Deliver public education for service line disturbances. (o) Deliver filters and 6 months of replacement cartridges during disturbances of service lines. (p) Develop inventory-related outreach materials and submit to the State for review. (q) Distribute inventory-related outreach materials. (r) Provide translation services for public education materials. (s) Certify to the State that lead outreach was completed.[3] (t) Update mandatory language for lead ALE public education and submit to the State for review. (u) Deliver lead ALE public education materials to all customers. (v) Post notice to website. (w) Prepare press release. (x) Contact public health agencies to obtain additional organizations and update recipient list. (y) Notify public health agencies and other organizations. (z) Consult with State on other public education activities. (aa) Implement other public education activities.
	4.3.6.4: Public Education Activities in Response to Multiple Lead ALEs.	(bb) Develop plan for making filters available and submit to the State for review. (cc) Develop outreach materials for systems with multiple lead ALEs and submit to the State for review. (dd) Conduct enhanced public education for systems with multiple lead ALEs. (ee) Consult with State on filter program for systems with multiple lead ALEs. (ff) Administer filter program for systems with multiple lead ALEs. (gg) Make filters available due to multiple lead ALEs.

Acronyms: 3Ts = ''3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities Toolkit: A Training, Testing, and Taking Action Approach (Revised Manual)''; ALE = action level exceedance; CCR = consumer confidence report; CCT = corrosion control treatment; CWS = community water system; DSSA = Distribution System and Site Assessment; GRR = galvanized requiring replacement; OCCT = optimal corrosion control treatment; OWQPs = optimal water quality parameters; PO4 = orthophosphate; POU = point-of-use; PWS = public water system; WQP = water quality parameter.

Notes:

[1] Numbering and lettering in the exhibit represents the section in the final LCRI Economic Analysis document (USEPA, 2024a), where additional information on the definition of and derivation of burden and cost for each activity is located. Systems will also incur burden for recordkeeping activities under the LCRI, such as retaining records of decisions, supporting documentation, technical basis for decisions, and documentation submitted by the system. The EPA has included burden for recordkeeping with each activity when applicable as opposed to providing separate burden estimates.

[2] The EPA assigned a unique letter identification (ID) for each activity under a given rule component. Activities are generally organized with upfront, one-time activities first followed by ongoing activities.

[3] This certification is inclusive of outreach activities in sections 4.3.6.1 through 4.3.6.4 in the final LCRI Economic Analysis.

The EPA uses the derived unit costs associated with each regulatory activity from Exhibit 5 as inputs to the SafeWater LCR model, which estimates low and high scenario PWS total costs for the baseline (2021 LCRR) and the final LCRI.[21] Baseline total costs are then subtracted from the LCRI total costs to determine the incremental costs of the new regulatory requirements under the final LCRI for both the low- and high-cost scenarios. These total PWS incremental costs are presented as annualized values, discounted at two percent in Exhibit 6. The estimated total PWS incremental annualized costs of the final LCRI range from $1.45 to $1.95 billion, in 2022 dollars, when a two percent discount rate is applied. The exhibits also detail the proportion of the annualized costs attributable to each rule component. For estimated total and incremental costs by subcomponent see chapter 4, section 4.3 of the final LCRI Economic Analysis (USEPA, 2024a).

EXHIBIT 6—ESTIMATED NATIONAL TOTAL MONETIZED ANNUALIZED PWS RULE COSTS—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

PWS annual costs	Low estimate			High estimate		
Rule component	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$134.0	$166.0	$32.0	$143.6	$176.2	$32.6
PWS Service Line Replacement *	84.6	1,259.0	1,174.4	124.5	1,763.9	1,639.4
Corrosion Control Technology	552.0	591.1	39.1	647.8	692.9	45.1
Point-of Use Device Installation and Maintenance	2.4	5.1	2.7	5.9	9.6	3.7
Public Education and Outreach	69.6	267.3	197.7	72.1	302.2	230.1

[21] For additional information on how the SafeWater LCR model uses unit cost date to estimate PWS costs, see chapter 4, section 4.3 of the final LCRI Economic Analysis (USEPA, 2024a).

EXHIBIT 6—ESTIMATED NATIONAL TOTAL MONETIZED ANNUALIZED PWS RULE COSTS—2 PERCENT DISCOUNT RATE—Continued

[Millions of 2022 USD]

PWS annual costs	Low estimate			High estimate		
Rule component	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Rule Implementation and Administration	0.1	3.4	3.3	0.2	3.4	3.2
Total Annual PWS Costs	*842.7*	*2,291.9*	*1,449.2*	*994.1*	*2,948.2*	*1,954.1*

* Service line replacement includes full and partial lead and GRR service line replacements.

Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables that vary between the low- and high-cost scenarios. For the LCRR Economic Analysis (USEPA, 2020d), the EPA assumed that the cost of customer-side service line replacements made under the goal-based replacement rate would be paid for by households. The agency also assumed that system-side service line replacements under the goal-based replacement rate and all service line replacements (both customer-side and systems-side) would be paid by the PWS under the three percent mandatory replacement rate. The EPA made these modeling assumptions based on the different levels of regulatory responsibility systems faced operating under a goal-based replacement rate versus a mandatory replacement rate. While systems would not be subject to a potential violation for not meeting the target replacement rate under the goal-based replacement requirement, under the three percent mandatory replacement rate, the possibility of a violation could motivate more systems to meet the target replacement rate even if they had to adopt customer incentive programs that would shift the cost of replacing customer-side service lines from customers to the system. To be consistent with these LCRR modeling assumptions, under the LCRI, the EPA assumed that mandatory replacement costs would fall only on systems. Therefore, the negative incremental values reported for the ''Household Service Line Replacement Costs'' category do not represent a net cost savings to households. They represent an assumed shift of the estimated service line replacement costs from households to systems. The EPA has insufficient information to estimate the actual service line replacement cost-sharing relationship between customers and systems at a national level for this analysis.

2. Annualized Per-Household Costs

The SafeWater LCR cost model calculates the annualized cost per household by first calculating the cost per gallon of water produced by the CWS. This cost per gallon represents the cost incurred by the system to comply with the requirements of the LCRI. This is a total cost for the system that includes the rule implementation and administration, sampling, service line inventory and replacement, CCT, point-of-use program (if a small system selects this compliance option), and public education and outreach component costs. Because of uncertainty in three important LCRI cost input variables, discussed in section VI.C of this preamble, the agency developed low- and high-cost scenarios. These scenarios produce a range in the estimated cost per gallon and two estimates for annualized per household costs.

The SafeWater LCR model multiplies these low and high scenario costs per gallon by the average annual household consumption (in gallons) to determine the cost per household per year associated with increased costs borne by the CWS. Exhibits 7 and 8 (Exhibits 4–139 and 4–140 in chapter 4 of the final LCRI Economic Analysis) show the distributions of incremental annualized costs for CWS households by primary water source and size category. Note that the percentiles represent the distribution of average household costs across CWSs in a category, not the distribution of costs across all households in a CWS category.[22]

EXHIBIT 7—ESTIMATED ANNUALIZED INCREMENTAL COST PER HOUSEHOLD BY COMMUNITY WATER SYSTEM CATEGORY—LOW SCENARIO

[2022 USD]

Ownership	Source water	Size	Mean	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
Private	*Ground*	*Less than 100*	$67.10	$28.10	$39.80	$57.80	$89.00	$117.00
Private	*Ground*	*101 to 500*	22.50	6.40	11.40	19.40	28.10	43.50
Private	*Ground*	*501 to 1,000*	4.60	1.20	1.60	3.00	6.10	8.50
Private	*Ground*	*1,001 to 3,300*	2.70	0.60	0.90	1.60	3.60	4.80
Private	*Ground*	*3,301 to 10,000*	8.50	−0.20	0.60	5.00	14.50	25.00
Private	*Ground*	*10,001 to 50,000*	6.50	0.10	0.60	6.40	11.20	14.30
Private	*Ground*	*50,001 to 100,000*	7.50	0.00	0.30	8.70	11.70	13.90
Private	*Ground*	*100,001 to 1,000,000*	4.70	0.00	0.20	3.80	8.50	9.70
Private	*Surface*	*Less than 100*	59.20	23.40	32.80	50.90	78.60	106.40
Private	*Surface*	*101 to 500*	17.70	5.60	8.40	15.00	22.40	33.70
Private	*Surface*	*501 to 1,000*	4.30	1.50	1.90	2.80	5.20	8.70
Private	*Surface*	*1,001 to 3,300*	2.60	0.60	0.70	1.40	3.20	4.60
Private	*Surface*	*3,301 to 10,000*	9.70	0.30	0.80	6.40	15.30	26.20
Private	*Surface*	*10,001 to 50,000*	5.50	0.20	0.50	4.70	9.60	13.00
Private	*Surface*	*50,001 to 100,000*	7.00	0.00	2.00	7.90	10.90	13.80
Private	*Surface*	*100,001 to 1,000,000*	5.70	0.00	0.20	6.10	9.70	12.10
Private	*Surface*	*Greater than 1,000,000*	1.90	1.30	1.30	2.40	2.40	2.60
Public	*Ground*	*Less than 100*	52.20	23.40	31.60	43.50	69.50	93.90
Public	*Ground*	*101 to 500*	14.80	4.90	7.40	11.80	18.60	28.10
Public	*Ground*	*501 to 1,000*	3.70	1.20	1.60	2.50	4.40	6.70
Public	*Ground*	*1,001 to 3,300*	2.00	0.50	0.70	1.30	2.50	3.50
Public	*Ground*	*3,301 to 10,000*	7.10	0.20	0.60	4.30	11.30	19.30

[22] Note that, although the EPA assumed in the cost analysis that systems would pay for customer-side service line replacement, it is possible that, in some systems, individual homeowners may bear a much greater annual household burden that includes the customer-side service line replacement. The EPA estimates the cost of removing the customer-owned portion of a service line to range from $1,920 to $5,400, with a central tendency (median) of $3,273. The percentage of customers in each water system paying the higher customer-side service line replacement costs depends on the number of lead and GRR service lines in the water system, the rate of replacement, and the details of the water system's service line replacement program.

EXHIBIT 7—ESTIMATED ANNUALIZED INCREMENTAL COST PER HOUSEHOLD BY COMMUNITY WATER SYSTEM CATEGORY—LOW SCENARIO—Continued
[2022 USD]

Ownership	Source water	Size	Mean	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
Public	*Ground*	*10,001 to 50,000*	4.50	0.10	0.50	4.00	7.30	10.20
Public	*Ground*	*50,001 to 100,000*	5.20	0.00	0.90	6.00	8.20	9.90
Public	*Ground*	*100,001 to 1,000,000*	5.20	0.00	1.20	6.30	8.00	9.60
Public	*Ground*	*Greater than 1,000,000*	0.60	0.30	0.30	0.80	0.80	0.90
Public	*Surface*	*Less than 100*	54.30	21.00	29.70	52.50	72.20	90.30
Public	*Surface*	*101 to 500*	12.60	4.40	6.30	10.20	15.50	23.60
Public	*Surface*	*501 to 1,000*	3.50	1.30	1.60	2.40	4.20	6.40
Public	*Surface*	*1,001 to 3,300*	2.00	0.50	0.70	1.20	2.30	3.40
Public	*Surface*	*3,301 to 10,000*	7.90	0.50	0.80	5.30	12.90	20.60
Public	*Surface*	*10,001 to 50,000*	5.00	0.20	0.60	4.60	8.40	11.10
Public	*Surface*	*50,001 to 100,000*	5.90	0.00	0.40	6.50	9.50	11.80
Public	*Surface*	*100,001 to 1,000,000*	6.50	0.10	0.50	7.60	10.00	12.10
Public	*Surface*	*Greater than 1,000,000*	2.40	0.30	0.60	2.00	2.40	5.00

Notes: Rows are not included for system categories that contain zero systems. Detailed rows may not add exactly to the total due to independent rounding.
When evaluating the economic impacts on PWSs, the EPA uses the estimated PWS cost of capital to discount future costs (not the 2 percent discount rate used to evaluate social costs and benefit) because this best represents the actual costs of compliance that water systems would incur over time. For more information on cost of capital, see the final LCRI Economic Analysis chapter 4, section 4.2.3.3.

EXHIBIT 8—ESTIMATED ANNUALIZED INCREMENTAL COST PER HOUSEHOLD BY COMMUNITY WATER SYSTEM CATEGORY—HIGH SCENARIO
[2022 USD]

Funding	Source Water	Size	Mean	10th percentile	25th percentile	50th percentile	75th percentile	90th percentile
Private	*Ground*	*Less than 100*	$64.60	$25.50	$35.50	$55.40	$87.40	$115.80
Private	*Ground*	*101 to 500*	22.00	4.60	9.40	18.70	27.70	46.80
Private	*Ground*	*501 to 1,000*	4.80	1.00	1.50	2.90	6.50	11.00
Private	*Ground*	*1,001 to 3,300*	2.80	0.50	0.80	1.50	3.70	5.20
Private	*Ground*	*3,301 to 10,000*	11.20	−1.70	0.60	6.20	19.50	34.00
Private	*Ground*	*10,001 to 50,000*	8.90	0.10	0.50	8.00	15.40	20.40
Private	*Ground*	*50,001 to 100,000*	10.60	0.00	0.10	12.00	16.70	20.10
Private	*Ground*	*100,001 to 1,000,000*	6.50	0.00	0.20	6.10	11.70	13.80
Private	*Surface*	*Less than 100*	57.20	20.90	29.90	49.30	79.90	108.10
Private	*Surface*	*101 to 500*	16.70	2.60	6.90	13.30	21.20	35.10
Private	*Surface*	*501 to 1,000*	4.40	1.20	1.80	2.70	5.60	9.70
Private	*Surface*	*1,001 to 3,300*	2.80	0.50	0.70	1.20	3.40	5.20
Private	*Surface*	*3,301 to 10,000*	12.50	−0.50	0.70	7.10	20.30	36.60
Private	*Surface*	*10,001 to 50,000*	7.50	0.10	0.60	4.90	13.10	18.20
Private	*Surface*	*50,001 to 100,000*	9.80	0.00	2.20	10.90	15.30	19.40
Private	*Surface*	*100,001 to 1,000,000*	8.00	0.00	0.10	8.50	14.00	16.90
Private	*Surface*	*Greater than 1,000,000*	2.50	1.60	1.60	3.20	3.20	3.40
Public	*Ground*	*Less than 100*	51.70	22.20	29.40	44.40	71.70	92.10
Public	*Ground*	*101 to 500*	15.00	4.40	6.40	11.50	18.80	30.60
Public	*Ground*	*501 to 1,000*	4.00	1.20	1.50	2.50	4.80	8.20
Public	*Ground*	*1,001 to 3,300*	2.30	0.40	0.70	1.20	2.70	4.30
Public	*Ground*	*3,301 to 10,000*	8.70	−0.60	0.50	4.40	15.00	26.30
Public	*Ground*	*10,001 to 50,000*	6.20	0.10	0.50	5.70	10.50	14.40
Public	*Ground*	*50,001 to 100,000*	7.30	0.00	1.50	8.40	11.70	14.20
Public	*Ground*	*100,001 to 1,000,000*	7.20	0.00	2.00	8.60	11.00	13.50
Public	*Ground*	*Greater than 1,000,000*	0.80	0.30	0.30	1.10	1.10	1.20
Public	*Surface*	*Less than 100*	52.90	19.40	28.50	50.30	71.00	90.50
Public	*Surface*	*101 to 500*	12.60	3.80	5.40	9.80	15.80	25.50
Public	*Surface*	*501 to 1,000*	3.60	1.10	1.50	2.30	4.60	7.60
Public	*Surface*	*1,001 to 3,300*	2.20	0.40	0.60	1.20	2.60	4.00
Public	*Surface*	*3,301 to 10,000*	9.90	0.10	0.70	5.80	17.00	27.90
Public	*Surface*	*10,001 to 50,000*	7.00	0.20	0.60	6.20	11.70	16.00
Public	*Surface*	*50,001 to 100,000*	8.20	0.00	0.40	9.00	13.50	16.70
Public	*Surface*	*100,001 to 1,000,000*	9.10	0.00	0.60	10.50	14.10	17.00
Public	*Surface*	*Greater than 1,000,000*	3.20	0.30	0.80	2.60	3.30	6.90

Notes: Rows are not included for system categories that contain zero systems. Detailed rows may not add exactly to the total due to independent rounding.
When evaluating the economic impacts on PWSs, the EPA uses the estimated PWS cost of capital to discount future costs (not the two percent discount rate used to evaluate social costs and benefit) because this best represents the actual costs of compliance that water systems would incur over time. For more information on cost of capital, see the final LCRI Economic Analysis chapter 4, section 4.2.3.3.

3. State Costs

For each of the PWS cost components and subcomponents, previously described in section VI.D.1 of this preamble, States (*i.e.,* primacy agencies) have associated costs. Exhibit 9 (Exhibit 4–141 in the final LCRI Economic Analysis (USEPA, 2024a)) provides a list of the State activities, organized by LCRI cost component and subcomponent groups, for which the EPA developed unit costs. Detailed information on the derivation of the unit costs associated with each State activity can be found in the sections of the final LCRI Economic Analysis identified in Exhibit 9.

EXHIBIT 9—STATE COST COMPONENTS, SUBCOMPONENTS, AND ACTIVITIES ORGANIZED BY SECTION [1]

Component	Subcomponents	Activities [2]
4.4.1: State Implementation and Administrative Costs.	4.4.1.1: State Start-up Implementation and Administrative Activities.	(a) Adopt rule and develop program. (b) Modify data management systems. (c) Provide system training and technical assistance. (d) Provide staff training. (e) Review and approve small system flexibility option.
	4.4.1.2: State Annual Implementation and Administrative Activities.	(f) Coordinate with the EPA. (g) Provide ongoing technical assistance. (h) Report to SDWIS/Fed. (i) Train staff for annual administration.
4.4.2: State Sampling Related Costs.	4.4.2.1: State Lead Tap Sampling Costs.	(a) Provide templates for revised sampling instructions and conduct review. (b) Review updated sampling plan. (c) Review initial lead monitoring data and prepare systems for status under the LCRI. (d) Review change in tap sample locations. (e) Review 9-year monitoring waiver renewal. (f) Review sample invalidation requests. (g) Review consumer notification certifications. (h) Review monitoring results and 90th percentile calculations.
	4.4.2.2: State Lead WQP Sampling Costs.	(i) Review lead WQP sampling data and compliance with OWQPs.
	4.4.2.3: State Copper WQP Monitoring Costs.	(j) Review copper WQP sampling data and compliance with OWQPs.
	4.4.2.4: State Source Water Monitoring Costs.	(k) Review source water monitoring results.
	4.4.2.5: State School Sampling Costs.	(l) Review list of schools and child care facilities. (m) Provide templates on school and child care facility testing program. (n) Review school and child care facility testing program materials. (o) Review school and child care facility sampling results after individual sampling events. (p) Review annual reports on school and child care facility lead in drinking water testing program.
4.4.3: State CCT Related Costs	4.4.3.1: CCT Installation	(a) Review CCT study and determine type of CCT to be installed. (b) Set OWQPs after CCT installation.
	4.4.3.2: Re-optimization	(c) Review CCT study and determine needed OCCT adjustment. (d) Reset OWQPs after CCT re-optimization.
	4.4.3.3: State DSSA Costs	(e) Consult with system prior to any DSSA CCT adjustments. (f) Review report on DSSA responses.
	4.4.3.4: State Lead CCT Routine Costs.	(g) Review CCT guidance and applicability to individual PWSs. (h) Review water quality data with PWSs during sanitary survey. (i) Consult on required actions in response to source water change. (j) Consult on required actions in response to treatment change.
4.4.4: State Service Line Inventory and Replacement Related Costs.	4.4.4.1: Service Line Inventory Costs.	(a) Review connector updated LCRR initial inventory (baseline inventory). (b) Review annual service line inventory updates. (c) Review inventory validation report.
	4.4.4.2: Service Line Replacement Plan Review Costs.	(d) Review initial service line replacement plan. (e) Review information on deferred deadline and associated replacement rate in the service line replacement plan and determine fastest feasible rate. (f) Review annually updated service line replacement plan or certification of no change. (g) Conduct triennial review of water system updated recommended deferred deadline and associated replacement rate and determine fastest feasible rate.
	4.4.4.3: Service Line Replacement Report Review Costs.	(h) Review annual service line replacement program report.
4.4.5: State POU Related Costs	4.4.5.1: One-Time POU Program Costs.	(a) Review POU plan. (b) Provide templates for POU outreach materials. (c) Review POU public education materials.
	4.4.5.2: Ongoing POU Program Costs.	(d) Review sample invalidation request for POU monitoring. (e) Review customer notification certifications. (f) Review annual POU program report.
4.4.6: State Public Education-Related Costs.	4.4.6.1: Consumer Notice	(a) Provide templates for consumer notice materials. (b) Review lead consumer notice materials. (c) Review copy of the consumer notice and certification.

EXHIBIT 9—STATE COST COMPONENTS, SUBCOMPONENTS, AND ACTIVITIES ORGANIZED BY SECTION [1]—Continued

Component	Subcomponents	Activities [2]
	4.4.6.2: Activities Regardless of the Lead 90th Percentile Level.	(d) Provide templates for updated CCR language. (e) Provide templates for local and State health department lead outreach. (f) Review lead outreach materials for local and State health departments. (g) Participate in joint communication efforts with local and State health departments. (h) Provide templates for service line disturbance outreach materials. (i) Review public education materials for service line disturbances. (j) Provide templates for inventory-related outreach materials. (k) Review inventory-related outreach materials. (l) Provide technical assistance to PWSs for public education materials. (m) Review public education certifications.
	4.4.6.3: Public Education Activities in Response to Lead ALE.	(n) Provide templates for updated public education materials for systems with a lead ALE. (o) Review revised lead language for systems with a lead ALE. (p) Consult with CWS on other public education activities in response to lead ALE.
	4.4.6.4: Public Education Activities in Response to Multiple Lead ALEs.	(q) Review plan for making filters available. (r) Provide templates for systems with multiple lead ALEs. (s) Review outreach materials provided by systems with multiple lead ALEs. (t) Consult on filter program for systems with multiple lead ALEs.

Acronyms: ALE = action level exceedance; CCR = Consumer Confidence Report; CCT = corrosion control treatment; CWS = community water system; DSSA = Distribution System and Site Assessment; LCRI = Lead and Copper Rule Improvements; LSL = lead service line; LSLR = lead service line replacement; OWQPs = optimal water quality parameters; POU = point-of-use; PWS = public water system; SDWIS/Fed = Safe Drinking Water Act Information System/Federal version; WQP = water quality parameter.

Notes:

[1] Numbering and lettering in the exhibit represents the sections in the final LCRI Economic Analysis (USEPA, 2024a), where additional information on the definition of and derivation of burden and cost for each activity is located. States will also incur burden for recordkeeping activities under the final LCRI, such as retaining records of decisions, supporting documentation, technical basis for decisions, and documentation submitted by the system. The EPA has included burden for recordkeeping with each activity when applicable as opposed to providing separate burden estimates.

[2] The EPA assigned a unique letter of identification (ID) for each activity under a given rule component. Activities are generally organized with upfront, one-time activities first followed by ongoing activities. Note that these activities are different than the activities identified for PWSs in Exhibit 5.

In the SafeWater LCR model, the majority of the costs associated with States are determined on a per water system basis. State activities and costs are largely driven by the rule requirements for individual water systems. The exception is the implementation and administrative costs that are tallied on a per-State basis. The per-water-system State costs and per-State costs are summed to obtain aggregate costs for this category. For additional information on how the SafeWater LCR model uses unit cost data to estimate State costs, see chapter 4, section 4.4 of the final LCRI Economic Analysis (USEPA, 2024a).

The SafeWater LCR cost model estimates that States will incur monetized incremental estimated annualized costs that range from $28 million to $26 million under the low- and high-cost scenarios, respectively, when presented in 2022 dollars and discounted at the two percent rate.

4. Costs Impacts Associated With Additional Phosphate Usage

Adding orthophosphate CCT creates a protective inner coating on pipes that can inhibit lead leaching. However, once phosphate is added to the public water distribution system, some of this incremental loading remains in the water stream as it flows into wastewater treatment plants (WWTPs) downstream. This generates treatment costs for certain WWTPs. In addition, at those locations where treatment does not occur, water with elevated phosphorus concentrations may discharge to water bodies and induce certain ecological impacts. Due to many water systems operating both the wastewater and drinking water systems, the EPA is evaluating the costs of additional phosphate usage for informational purposes. Because these costs are associated with wastewater treatment to meet Clean Water Act regulatory requirements, they are not ''likely to occur solely as a result of compliance'' with the final LCRI, and, therefore, are not costs considered as part of the HRRCA under SDWA, section 1412(b)(3)(C)(i)(III).

To estimate the potential fate of the orthophosphate added at PWSs, the EPA developed a conceptual mass balance model. The EPA applied this conceptual model to estimate the increase in loading at WWTPs, given an initial loading from corrosion control at water treatment plants. The WWTPs could incur costs because of upstream orthophosphate additions if they have permit discharge limits for phosphorus parameters. The percentage of WWTPs with phosphorus limits has increased over time. From 2007 to 2024,[23] in annual percentage rate terms, the growth rate in the percentage of WWTPs with phosphorus limits is 3.4 percent (see chapter 4, section 4.5.1 of the final LCRI Economic Analysis; USEPA, 2024a).

The EPA applied the growth rate observed from 2007 to 2024 to estimate the anticipated percentage of WWTPs with phosphorus limits in future years. This growth rate results in an estimated 61 percent of WWTPs with phosphorus discharge limits after 35 years. Applied

[23] The agency used WWTP phosphorus limit data from the EPA's Discharge Monitoring Report (DMR) ''Water Pollutant Loading Tool'' using search criteria limiting results to the phosphorus parameter group and WWTPs only. The DMR Water Pollutant Loading Tool data is only available from 2007 onward.

as the percentage of WWTPs that need to take treatment actions, this estimate is likely conservative.

The specific actions a WWTP might need to take to maintain compliance with a National Pollution Discharge Elimination System (NPDES) phosphorus permit limit will depend on the type of treatment present at the WWTP and the corresponding phosphorus removal provided. Based on a review of NPDES data, it is likely that most of the WWTPs that already have phosphorus limits have some type of treatment to achieve the limit.

Some treatment processes can accommodate incremental increases in influent loading and still maintain their current removal efficiency. Such processes might not need significant adjustment to maintain their existing phosphorus removal efficiency, given an incremental increase. Other treatment processes may need modifications to their design or operation to maintain their removal efficiency in the face of an influent loading increase.

The EPA derived a unit cost of $5.44 per pound for removing incremental phosphorus (for additional information, see chapter 4, section 4.5.1 of the final LCRI Economic Analysis; USEPA, 2024a). This unit cost includes the cost of additional chemical consumption and the operating cost of additional sludge processing and disposal. The costs a WWTP could incur depend on the magnitude of the loading increase relative to the specific WWTP's effluent permit limit. The WWTPs whose current discharge concentrations are closer to their limit are more likely to have to act. The WWTPs whose current treated water concentrations are well below their limit are less likely to incur costs but might, under certain conditions, incur costs (*e.g.,* when phosphorus removal achieved by technology in place at a WWTP is sensitive to incremental phosphorus loading increases and must be modified to continue to meet the limit). Furthermore, future phosphorus limits could be more stringent than existing limits.

Therefore, the EPA conservatively assumed that any WWTP with a discharge limit for phosphorus parameters could incur costs. Accordingly, in calculating costs, the EPA used the anticipated percentage of WWTPs with phosphorus discharge limits as the likelihood that incremental orthophosphate loading from a drinking water system would reach a WWTP with a limit. The EPA combined this likelihood and the unit cost (previously estimated) with incremental phosphorus loadings to calculate incremental costs to WWTPs for each year of the period of analysis. The incremental annualized cost that the WWTPs would incur to remove additional phosphorous associated with the LCRI, under the low- and high-cost scenario, ranges from $120,000 to $300,000 at a two percent discount rate.

The EPA estimates that WWTP treatment reduces phosphorus loads reaching water bodies by 59 percent, but they are not eliminated. The rule's national-level total incremental phosphorus loads reaching water bodies are projected to change over the period of analysis from the low/high scenario range of 225,000 to 272,000 pounds 15 years after promulgation to the low/high scenario range of 216,000 to 260,000 pounds at year 35. Note that the EPA model assumes that once CCT is installed or re-optimized phosphate use remains constant over the remainder of the period of analysis. Because most CCT implementation is carried out prior to complete LSL removal and the model does not allow for reductions in the use of phosphate after systems remove all their lead content service lines the EPA's CCT cost estimates and phosphorus loading estimates to both WWTPs and receiving waterbodies may be overestimated. See chapter 4, section 4.5.2 of the final LCRI Economic Analysis (USEPA, 2024a) for information on how loading estimates are calculated. The ecological impacts of these increased phosphorous loadings are highly localized: total incremental phosphorus loadings will depend on the amount and timing of the releases, characteristics of the receiving water body, effluent discharge rate, existing total phosphorus levels, and weather and climate conditions. Detailed, spatially explicit information on effluents and on receiving water bodies does not exist in a form suitable for this analysis. Rather, to evaluate the potential ecological impacts of the rule, the EPA evaluated the significance of the national-level phosphorus loadings compared to other phosphorous sources in the terrestrial ecosystem.

To put these phosphorus loadings in context, estimates from the U.S. Geological Survey (USGS) Spatially Referenced Regression On Watershed Attributes (SPARROW) model suggest that anthropogenic sources deposit roughly 750 million pounds of total phosphorus per year (USEPA, 2019c). The total phosphorus loadings from the LCRI high-cost scenario would contribute about 0.5 percent (3.6 million/750 million) of total phosphorus entering receiving waterbodies in a given year, and the incremental amount of total phosphorus associated with the final LCRI relative to the baseline (2021 LCRR) grows only 0.03 percent (260,000/750 million). At the national level, the EPA expects total phosphorus entering waterbodies as a result of the final LCRI update to be small, relative to the total phosphorus load deposited annually from all other sources. National average load impacts may obscure localized ecological impacts in some circumstances, but the existing data do not allow an assessment as to whether this incremental load will induce ecological impacts in particular areas. It is possible, however, that localized impacts may occur in certain water bodies without restrictions on phosphate influents or in locations with existing elevated phosphate levels.

An increase in phosphorus loadings can lead to economic impacts and undesirable aesthetic impacts. Excess nutrient pollution can cause eutrophication (excessive plant and algae growth) in lakes, reservoirs, streams, and estuaries throughout the United States. Eutrophication, by inducing primary production, leads to seasonal decomposition of additional biomass and consumption of oxygen, creating a state of hypoxia (or low oxygen) within the water body. In extreme cases, the low- to no-oxygen states can create dead zones, or areas in the water where aquatic life cannot survive. Studies indicate that eutrophication can decrease aquatic diversity for this reason (*e.g.,* Dodds et al., 2009). Eutrophication may also stimulate the growth of harmful algal blooms (HABs) or over-abundant algae or cyanobacteria populations. Algal blooms can seriously harm the aquatic ecosystem by blocking sunlight and creating diurnal swings in oxygen levels because of overnight respiration. Such conditions can starve and deplete aquatic species. In addition, rapid photosynthesis may consume dissolved inorganic carbon and elevate pH levels (Chislock et al., 2013). Certain types of phosphorous-fueled cyanobacterial blooms may produce toxins to both humans and aquatic life. These toxins can include microcystins (liver toxins) and neurotoxins. This issue is particularly prevalent in lakes or other slow-flowing water bodies. HABs producing cyanotoxins that occur in sources in drinking water can impact drinking water (USEPA, 2024m). HAB events have also directly or indirectly contributed to fish kill events by causing the absorption or ingestion of toxins, or by creating conditions of limited sunlight and oxygen (Glibert et al., 2005). In addition to lethal impacts on aquatic organisms, toxins produced

by HABs can harm terrestrial wildlife and livestock that are exposed to toxins in sufficient levels (Backer, 2002; Chislock et al., 2013).

5. Total Monetized Costs

The estimated annualized low- and high-cost scenarios, discounted at two percent, that PWSs, households,[24] and States will incur in complying with the baseline (2021 LCRR), the final LCRI, and incrementally are summarized in Exhibit 10. The estimated total monetized incremental annualized cost of the final LCRI range from $1.47 to $1.95 billion at a two percent discount rate, in 2022 dollars. The exhibit also details the proportion of the annualized costs attributable to each rule component.

EXHIBIT 10—ESTIMATED NATIONAL MONETIZED ANNUALIZED RULE COSTS—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

PWS annual costs	Low estimate			High estimate		
Rule component	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$134.0	$166.0	$32.0	$143.6	$176.2	$32.6
PWS Service Line Replacement *	84.6	1,259.0	1,174.4	124.5	1,763.9	1,639.4
Corrosion Control Technology	552.0	591.1	39.1	647.8	692.9	45.1
Point-of Use Installation and Maintenance	2.4	5.1	2.7	5.9	9.6	3.7
Public Education and Outreach	69.6	267.3	197.7	72.1	302.2	230.1
Rule Implementation and Administration	0.1	3.4	3.3	0.2	3.4	3.2
Total Annual PWS Costs	842.7	2,291.9	1,449.2	994.1	2,948.2	1,954.1
Household Service Line Replacement Costs **	8.1	0.0	−8.1	26.4	0.0	−26.4
State Rule Implementation and Administration	38.4	66.1	27.7	41.8	67.6	25.8
Wastewater Treatment Plant Costs ***	3.0	3.0	0.0	4.8	5.1	0.3
Total Annual Rule Costs	892.2	2,361.0	1,468.8	1,067.1	3,020.9	1,953.8

Note: Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables which vary between the low- and high-cost scenarios.

* Service line replacement includes full and partial lead and GRR service line replacements.

** The EPA in the LCRR Economic Analysis (USEPA, 2020d) assumed that the cost of customer-side service line replacements made under the goal-based replacement rate would be paid for by households. The agency also assumed that system-side service line replacements under the goal-based replacement rate and all service line replacements (both customer-side and systems-side) would be paid by the PWS under the 3 percent mandatory replacement rate. The EPA made these modeling assumptions based on the different levels of regulatory responsibility systems faced operating under a goal-based replacement rate versus a mandatory replacement rate. While systems would not be subject to a potential violation for not meeting the target replacement rate under the goal-based replacement requirement, under the 3 percent mandatory replacement rate, the possibility of a violation could motivate more systems to meet the target replacement rate even if they had to adopt customer incentive programs that would shift the cost of replacing customer-side service lines from customers to the system. To be consistent with these LCRR modeling assumptions, under the LCRI, the EPA assumed that mandatory replacement costs would fall only on systems. Therefore, the negative incremental values reported for the ''Household Service Line Replacement Costs'' category do not represent a net cost savings to households. They represent an assumed shift of the estimated service line replacement costs from households to systems. The EPA has insufficient information to estimate the actual service line replacement cost-sharing relationship between customers and systems at a national level for this analysis.

*** Due to many water systems operating both the wastewater and drinking water systems, the EPA is evaluating the costs of additional phosphate usage for informational purposes. Because these costs are not incurred by the public water system, these costs are not ''likely to occur solely as a result of compliance'' with the LCRI, and, therefore, are not costs considered as part of HRRCA under SDWA section 1412(b)(3)(C)(i)(III).

Acronyms: LCRI = Lead and Copper Rule Improvements; PWS = public water system.

E. Benefits Analysis

The final LCRI is expected to result in significant health benefits, since both lead and copper are associated with adverse health effects. Lead is a highly toxic pollutant that can damage neurological, cardiovascular, immunological, developmental, and other major body systems (USEPA, 2024b). The EPA is particularly concerned about ongoing exposure experienced by children because lead can affect brain development, which impacts lifelong level of function. Additionally, children, through their physiology and water ingestion requirements, may be at higher risk. Research shows that, on average, formula-fed infants and young children consume more drinking water per day on a body weight basis than adolescents. Using the USDA Continuing Survey of Food Intakes by Individuals (CSFII) data, (Kahn and Stralka, 2008) demonstrated this trend is most pronounced in children under one year of age who drink more than double the amount older children and adults drink per kg of body weight. Additionally, children absorb two to four times more lead than adults through the gastrointestinal tract (Mushak, 1991; WHO, 2011; and Ziegler et al., 1978). No safe blood lead level in children has been identified (CDC, 2024). The EPA assessed the quantification potential of those health endpoints identified in the agency's lead integrated science

[24] Note that as part of the baseline (LCRR) analysis of service line replacement costs the EPA assumed that customer-side service line replacements under the goal-based service line replacement program would be paid by the household. For the estimation of LCRI service line replacement costs the EPA assumed that all replacement cost would be borne by the PWS. These differing costing assumptions result in the positive household costs (not accruing to PWSs) reported under the baseline (LCRR) cost estimates while no household service line replacement costs are reported under the LCRI. These assumptions also result in decreased incremental costs for the LCRI under household service line replacement costs, but the cost of replacing the customer portion of service lines is now included, by assumption, in the LCRI incremental costs for PWS service line replacement.

assessments (ISAs) (2013 and 2024) and the NTP monograph (NTP, 2012), and summarized in appendix D of the final LCRI Economic Analysis (USEPA, 2024a). The EPA's health risk reduction and benefits assessment of the LCRI requirements concentrates on quantification and monetization of the estimated impact of reductions in lead exposure on four health endpoints: IQ values and cases of ADHD in children, lower birth weights in children of women of childbearing age, and cases of cardiovascular disease premature mortality in adults. The EPA has focused on these four health endpoints as the dose-response functions for these quantified health endpoints have been extensively reviewed by the agency and in the case of reductions in IQ losses, low birth weight and cardiovascular mortality, externally peer reviewed. Also, the approach used for IQ has been used in multiple rulemakings and undergone SAB review. As explained in appendix D of the final LCRI Economic Analysis (USEPA, 2024a), there are additional non-quantified lead health impacts to both children and adults that will be realized as a result of this rulemaking including: cardiovascular morbidity effects, renal effects, reproductive and developmental effects (apart from ADHD), immunological effects, neurological effects (apart from children's IQ), and cancer. Therefore, the quantified benefits of this rule likely underestimate the true social benefits.

Although copper is an essential element for health, excess intake of copper has been associated with several adverse health effects. Most commonly, excess exposure to copper results in gastrointestinal symptoms such as nausea, vomiting, and diarrhea (National Research Council, 2000). In susceptible populations, such as individuals with genetic disorders (*i.e.,* Wilson's Disease) or predispositions to accumulate copper, chronic exposure to excess copper can result in liver toxicity. Because household level data on the changes in copper concentrations that result from changes in CCT are not available, this analysis does not quantify any potential benefits from reduced copper exposure that may result from the rule. See appendix E in the final LCRI Economic Analysis (USEPA, 2024a) for additional copper health impact information.

1. Modeled Drinking Water Lead Concentrations

In updating the EPA's drinking water lead concentrations for the LCRI, the agency built upon the data and models used in the analysis for the 2021 LCRR. Detailed information on the residential lead concentration data and modeling from the 2021 LCRR can be found in chapter 6 of the final LCRR Economic Analysis (USEPA, 2020d). In the 2021 LCRR analysis, the EPA collected and used data on lead concentrations and information regarding LSL [25] and CCT status, location, and date of sample collection, representing 14 water systems across the United States and Canada. The EPA updated this data for the LCRI analysis by initially identifying eight additional sampling datasets.[26] After close assessment, it was determined that seven of the datasets had data availability and study design issues and could not be included.[27] Only the 532 samples collected from the City of Clarksburg, WV, in fall to winter of 2021 could be added to the lead concentration dataset, resulting in a total of 18,571 samples collected from 1,657 homes in 16 cities representing 15 city water systems. The EPA grouped the samples into LSL status categories (''LSL,'' ''Partial LSL,'' and ''No LSL''). The samples were also grouped by CCT treatment, assigning status as having ''None,'' ''Partial,'' or ''Representative.'' ''Partial'' includes those water systems with some pH adjustment and lower doses of a phosphate corrosion inhibitor, but this treatment is not optimized. ''Representative'' are those water systems in the dataset that have higher doses of phosphate inhibitors, which are considered optimized in the model. For additional information, see chapter 5, section 5.2.1 of the final LCRI Economic Analysis (USEPA, 2024a).

The EPA fit several regression models, following the same methodology from the 2021 LCRR benefits analysis (see chapter 6, section 6.2.2 of the final LCRR Economic Analysis (USEPA, 2020d), of tap water lead concentrations as predicted by LSL presence (''LSL'' or ''No LSL''), LSL extent (''Partial LSL''), CCT status, and ''profile liter.'' ''Profile liter'' is the cumulative volume a sample represented within a consecutive sampling series at a single location and time. Models that describe the profile liter accounted for the variation among sampling events, sampling sites, and city. The water lead concentrations exhibited a right-skewed distribution; therefore, the variable was log-transformed to provide a better modeled fit of the data. The EPA selected one of the regression models based on its fit and parsimony and used it to produce simulated lead concentrations for use in the benefits analysis (see Exhibit 5–8 in chapter 5 of the final LCRI Economic Analysis). The selected model suggests that besides water system, residence (sampling location), and sampling event, the largest effects on lead concentration in tap water come from the presence of LSLs and the number of liters drawn since the last stagnation period. Although CCT can reduce lead concentrations from LSLs and other sources of lead, such as residential plumbing fixtures, the presence or absence of CCT produces smaller effects on water lead concentration than the presence or absence of LSLs. Because locations with LSLs are more likely to have high lead concentrations than those without, CCT reduces water lead concentrations more in homes served by LSLs than in those not served by LSLs. See Exhibit 5–9 in chapter 5, section 5.2.2 of the final LCRI Economic Analysis (USEPA, 2024a) for additional details and estimated regression coefficients. The regression results indicate that, although CCT can significantly reduce water lead concentrations, the removal of LSLs in systems with representative CCT will still reduce water lead concentrations.

To statistically control for some sources of variability in the input data, the EPA, following the 2021 LCRR analysis, did not use summary statistics from the original data directly in estimating the effects of LSL and CCT status. Instead, the EPA produced simulated mean lead concentrations for 500,000 samples based on the selected regression model. These concentrations were simulated for the first 10 profile liter values taken after stagnation. The simulations were performed on the log-scale to conform to the fitted model (which used a log-transformed water lead concentration variable) and converted to the original scale to produce geometric means and geometric standard deviations. Geometric means are more representative of the central tendency of a right-skewed distribution than are arithmetic means and prevent overestimation of the impact of water lead levels on estimated blood lead levels and resulting benefits values. The simulated sample concentrations represent new estimates for the updated lead concentration dataset. These simulations rely on estimates of variability and uncertainty from the regression model (described above) and

[25] Note, no GRR lines are part of the profile dataset. See below in this section for a discussion of assumed GRR water lead concentrations.

[26] The EPA identified 8 datasets from Clarksburg, WV, Cleveland, OH, Chicago, IL, Kalamazoo, MI, Parchment, MI, Flint, MI, Galesburg, IL, and Sebring, OH, with drinking water lead samples collected from 2016 to 2021.

[27] For additional information on the assessment of the lead concentration data, see chapter 5, section 5.2.1 of the final LCRI Economic Analysis (USEPA, 2024a).

given information on LSL and CCT status. For more detail regarding this analysis, see chapter 5, section 5.2.2 of the final LCRI Economic Analysis (USEPA, 2024a). Individual estimates are best thought of as the central tendency for a lead tap sample concentration, given regression model parameters and estimated variance. The simulated samples represent the volume weighted average lead concentration using data from the first 10 liters of profile data, approximating lead exposure at the tap for the final LCRI benefits analysis.

The EPA estimates that improving CCT will produce significant reductions in lead tap water concentration overall. However, in the case of ''no LSL'' presence, the final model produced predictions of drinking water concentrations that overlapped almost completely for all CCT conditions.[28] In the available profile data, there were no statistically significant differences in measured water lead concentrations between the different CCT scenarios when LSLs were not present, likely because, apart from and compared to LSLs, the remaining sources of lead in residential plumbing (old solder and brass) are small and contribute far less lead to a multi-liter sequential sampling profile. Therefore, the EPA used the pooled estimate of predicted drinking water concentrations for all residences with no LSL presence, regardless of CCT condition, for the main analysis in chapter 5 of the final LCRI Economic Analysis (USEPA, 2024a).[29] Uncertainties in the water modeling are discussed in section 5.2.5 and in section 5.7, Exhibit 5–36 of the final LCRI Economic Analysis (USEPA, 2024a).

EXHIBIT 11—LSL AND CCT SCENARIOS AND SIMULATED GEOMETRIC MEAN TAP WATER LEAD CONCENTRATIONS AND STANDARD DEVIATIONS FOR THE FIRST TEN LITERS DRAWN AFTER STAGNATION FOR EACH COMBINATION OF LSL AND CCT STATUS (EXHIBIT INCLUDES ASSUMED GRR, POU, AND PITCHER FILTER WATER LEAD CONCENTRATIONS)

LSL status	CCT status	Simulated mean of log lead (µg/L)	Simulated SD[a] of log lead	Simulated geometric mean lead (µg/L)	Simulated geometric SD[a] of lead
LSL	None	2.67	1.32	14.38	3.75
Partial LSL/GRR	None	1.92	1.33	6.85	3.77
No LSL	None	[b] −0.19	[b] 1.33	[b] 0.83	[b] 3.78
LSL	Partial	2.07	1.33	7.93	3.77
Partial LSL/GRR	Partial	1.35	1.33	3.84	3.78
No LSL	Partial	[b] −0.19	[b] 1.33	[b] 0.83	[b] 3.78
LSL	Representative	1.45	1.33	4.27	3.78
Partial LSL/GRR	Representative	0.76	1.33	2.14	3.78
No LSL	Representative	[b] −0.19	[b] 1.33	[b] 0.83	[b] 3.78
POU and pitcher filters		[b] −0.19	[b] 1.33	[b] 0.83	[b] 3.78

Acronyms: LSL = lead service line; CCT = corrosion control treatment; POU = point-of-use; SD = standard deviation.
[a] Standard deviations reflect ''among-sampling event'' variability.
[b] Simulated results were pooled to produce a common estimate for homes with no LSL presence across CCT conditions. Also, thee ''No LSL'' values were used for POU and pitcher filter lead tap concentrations.
Note: GRR service line water lead concentrations are assumed to equal ''Partial LSL'' concentrations.

In the estimation of the benefits of the final LCRI, each modeled person within a water system is assigned to one of the estimated drinking water lead concentrations in Exhibit 11, depending on CCT, point-of-use, pitcher filter, and LSL/GRR service line status. Note that the EPA assumes GRR service lines produce water lead concentrations equivalent to the ''Partial LSL'' status, therefore, all households served by GRR service lines will have a starting water lead concentration equal to one of the three possible ''Partial LSL'' categories: ''Partial LSL/None CCT'', ''Partial LSL/Partial CCT'', ''Partial LSL/representative CCT''. The EPA estimated benefits under both the low and high scenarios used in the final LCRI analysis to characterize uncertainty in the estimates. With regard to benefits, the low and high scenarios differ by the following: the number of PWSs that will exceed the action level under the revised tap sampling requirements; the concentration-response functions that characterize how reductions in blood lead levels (caused by changes in lead exposure) translate into estimates of avoided IQ reductions, cases of ADHD, and cardiovascular disease premature mortality; and high and low estimates of the ADHD cost of illness. See chapter 4, section 4.2 for an overview of the SafeWater LCR model and chapter 5, section 5.5 for a summary of the variables driving the benefit scenarios in the final LCRI Economic Analysis (USEPA, 2024a). The EPA predicted the status of each system under the low and high scenarios prior to rule implementation and in each year of rule implementation for both the baseline (2021 LCRR) and final LCRI. Depending on the timing of required actions that can change CCT, point-of-use device, pitcher filter, and LSL/GRR service line status under both the baseline (2021 LCRR) and final LCRI low- and high-scenario model runs, changes in lead concentrations and resultant blood lead levels are predicted every year for the total population served by the systems for the 35-year period of analysis. In the primary benefits analysis for the final rule, improvements to CCT and the use of installed point-of-use devices are

[28] The EPA does not think that there are lead water mains in the country. Water mains are typically 6 to 16 inches in diameter whereas service lines have a smaller diameter. The common water main materials include ductile iron, PVC, asbestos cement, HDPE, and concrete steel (Folkman, 2018). LSLs are typically two inches or less in diameter (LSLR Collaborative, 2021).

[29] Note that, in the economic analysis, the EPA does not make restrictive assumptions in pairing specific CCT and LSL statuses. It is not improbable to have systems with CCT in place where no LSLs are present. The pre-2021 LCR requires all systems serving more than 50,000 persons to install CCT. Systems may also install CCT for other reasons apart from the LCR. Also, a number of systems have had 90th percentile tap sample values above the action level that require CCT even where LSLs are not present due to initial corrosivity of the water and secondary sources of lead like old brass and solder. It is possible for a system to have LSLs, but no CCT, because the existing water chemistry in a system may be non-corrosive and, therefore, lead 90th percentile lead tap sample values may be lower than the action level. The EPA combined data from two sources to estimate the percent of CCT systems with LSLs (SDWIS/Fed and Needs Survey data). See sections 3.3.3 and 3.3.4 of the final LCRI Economic Analysis (USEPA, 2024a) for additional details.

only predicted for individuals in households with LSL/GRRs prior to implementation of the baseline (2021 LCRR) and final LCRI requirements (consistent with the discussion above about the limits of the data for predicting the impact of CCT when LSLs are not present). In the model, LSL/GRR service line removals are predicted by water system and year for both the baseline (2021 LCRR) and final LCRI and multiplied by the average number of persons per household (across demographic categories) to determine the number of people shifting from one LSL/GRR service line status to another. To predict the changes in lead exposure that result from an improvement in CCT, the EPA assumes the entire LSL/GRR service line population of a water system will move to the new CCT status at the same time. The EPA also assumes that when a small system implements point-of-use devices under the LCRI's small system compliance flexibilities the entire water system moves to a drinking water lead concentration equivalent to the ''No LSL/Representative CCT'' status in Exhibit 11, which implies that everyone in households in a distribution system with LSLs/GRR service lines is properly using the point-of-use devices. See section IV.I of this preamble for additional information on the compliance alternatives available to small CWSs and NTNCWSs. As part of the multiple action level exceedance requirements under the final LCRI, the EPA assumes that 100 percent of a water system's population with lead, GRR, and unknown service lines will request and receive pitcher filters or point-of-use devices and, hence, will move to a water lead concentration equivalent to the ''No LSL/Representative CCT'' status in Exhibit 11. This assumption implies that everyone who receives a pitcher filter or point-of-use device is using it properly. See section IV.K of this preamble for additional information on the regulatory requirements associated with multiple action level exceedances. See chapter 5, section 5.3 of the final LCRI Economic Analysis (USEPA, 2024a) for more detailed information on the number of people switching lead concentration categories under the low and high scenarios.

2. Blood Lead Modeling

The EPA has determined that health impact functions exist in the literature, so that the agency can quantify the improvements from the decreases in water lead concentrations that result from implementation of the final LCRI. The four health endpoints the EPA quantifies are increased IQ values and reduced cases of ADHD in children, reductions in lower birth weights in children of women of childbearing age, and reduced cases of cardiovascular disease premature mortality in adults. As a prerequisite to estimating the impact to these health endpoints, the EPA must first use the drinking water lead concentration data the agency developed to determine the potential impact to blood lead levels from the regulatory requirements under the baseline (2021 LCRR) and the final LCRI for both children aged zero to seven years, using the coupled Stochastic Human Exposure and Dose Simulation Multimedia (SHEDS-multimedia) model and the Integrated Exposure and Uptake Biokinetic model (SHEDS-Pb, formerly known as SHEDS-IEUBK), and children eight years old through adulthood with the All Ages Lead Model (AALM) version 3.

3. Estimating Blood Lead Levels in Children (0–7 year olds)

Consistent with the 2021 LCRR benefits analysis, the EPA estimated the distribution of blood lead levels in children, aged zero to seven, using the EPA's SHEDS-Multimedia model coupled with its IEUBK model. For further information on SHEDS-Pb model development and evaluation, refer to Zartarian et al. (2017). As a first step in estimating the blood lead levels, the EPA utilized the SHEDS-Multimedia model, which can estimate distributions of lead exposure using a two-stage Monte Carlo sampling process, given input lead concentrations in various media and human behavior data from the EPA's Consolidated Human Activity Database (CHAD) and the Centers for Disease Control and Prevention's (CDC) National Health and Nutrition Examination Survey (NHANES). SHEDS-Multimedia, in this case, uses individual time-activity diaries from the CDC's NHANES and the EPA's CHAD for children aged zero to seven to simulate longitudinal activity diaries. Information from these diaries is then combined with relevant lead input distributions (*e.g.,* outdoor air lead concentrations) to estimate exposure. Drinking water tap concentrations for each of the modeled LSL and CCT scenarios were used as the drinking water inputs to SHEDS-Multimedia. For more detail on the other lead exposure pathways that are held constant as background in the model, see chapter 5, section 5.4 of the final LCRI Economic Analysis (USEPA, 2024a).

In the SHEDS-Pb coupled methodology, the SHEDS model takes the place of the exposure and variability components of the IEUBK model by generating a probability distribution of lead intakes across media. These intakes are multiplied by route-specific (*e.g.,* inhalation and ingestion) absorption fractions to obtain a distribution of lead uptakes (see Exhibit 5–17 in chapter 5, section 5.4 of the final LCRI Economic Analysis; USEPA, 2024a). This step is consistent with the uptake estimation that would normally occur within the IEUBK model. The media-specific uptakes can be summed across exposure routes to give total lead uptake per day. Next, the EPA used age-based relationships derived from the IEUBK model, through the use of a polynomial regression analysis, to relate these total lead uptakes to blood lead levels. Exhibit 12 presents modeled SHEDS-Pb blood lead levels in children by year of life and LSL presence, CCT status, and pitcher filter or point-of-use device. The blood lead levels in this exhibit represent what children's blood lead levels would be if they lived under the corresponding LSL or GRR service line, point-of-use device, pitcher filter, and CCT status combination for their entire lives. Note that when ''No LSL'' is the beginning or post-rule state, 0.83 µg/L (the simulated geometric mean) is the assumed concentration across all levels of CCT status (none, partial, or representative). As previously noted, the extent to which changes in CCT status make meaningful differences in lead concentrations for those without lead or GRR service lines cannot be determined from the data available to the EPA in this analysis.

EXHIBIT 12—MODELED SHEDS-Pb GEOMETRIC MEAN BLOOD LEAD LEVELS IN CHILDREN FOR EACH POSSIBLE DRINKING WATER LEAD EXPOSURE SCENARIO FOR EACH YEAR OF LIFE

Lead service line status	Corrosion control treatment status	Water concentration (µg/L)	GM blood lead level (µg/dL) [b] for specified year of life							
			0–1 [a]	1–2	2–3	3–4	4–5	5–6	6–7	Avg. [c]
LSL	None	14.38	4.94	2.74	2.82	2.71	2.78	2.95	2.61	3.08
Partial LSL/GRR	None	6.85	3.12	1.98	2.01	2.01	2.01	2.08	1.84	2.15

EXHIBIT 12—MODELED SHEDS-Pb GEOMETRIC MEAN BLOOD LEAD LEVELS IN CHILDREN FOR EACH POSSIBLE DRINKING WATER LEAD EXPOSURE SCENARIO FOR EACH YEAR OF LIFE—Continued

Lead service line status	Corrosion control treatment status	Water concentration (μg/L)	GM blood lead level (μg/dL) [b] for specified year of life							
			0–1 [a]	1–2	2–3	3–4	4–5	5–6	6–7	Avg. [c]
No LSL	None	0.83	1.19	1.28	1.30	1.28	1.30	1.39	1.10	1.26
LSL	Partial	7.93	3.27	2.11	2.13	2.10	2.08	2.21	1.95	2.27
Partial LSL/GRR	Partial	3.84	2.18	1.64	1.66	1.68	1.64	1.72	1.47	1.71
No LSL	Partial	0.83	1.19	1.28	1.30	1.28	1.30	1.39	1.10	1.26
LSL	Representative	4.27	2.36	1.72	1.73	1.74	1.73	1.80	1.53	1.80
Partial LSL/GRR	Representative	2.14	1.65	1.47	1.45	1.47	1.46	1.51	1.28	1.47
No LSL	Representative	0.83	1.19	1.28	1.30	1.28	1.30	1.39	1.10	1.26
POU or pitcher filter		0.83	1.19	1.28	1.30	1.28	1.30	1.39	1.10	1.26

[a] Blood lead levels for the first year of life are based on regression from IEUBK for 0.5- to 1-year-olds only.
[b] These values represent the blood lead for a child living with the LSL/CCT status in the columns to the left. Each year blood lead corresponding to actual modeled child is summed and divided by 7 in the model to estimate lifetime average blood lead.
[c] This column contains calculated average lifetime blood lead levels assuming a child lived in the corresponding LSL/GRR service line, CCT, POU, or pitcher filter scenario for their entire life.

4. Estimating Older Child and Adult Blood Lead Levels

In order to estimate the changes in blood lead levels in individuals from eight years old through adulthood (referred to here as adults) associated with the final LCRI, the EPA selected the AALM version 3. The AALM tool is primarily intended for ''quantitatively relating lead (Pb) exposures from environmental media that occur over the life time to Pb levels and concentrations in blood, other body tissues, and excreta'' (USEPA, 2019d). The tool consists of a lead exposure model and a lead biokinetics model. User inputs for selected environmental media (soil, dust, water, air, and food) are used in the exposure model to predict lead intake per day for a simulated individual, accounting for sex and age differences. Lead absorption by inhalation or ingestion is simulated in the biokinetics model to calculate the daily total rate of lead transfer to the central compartment. The AALM tool produces an estimate of lead concentration in various tissues and excreta, including estimates of blood lead levels over a lifetime.

The water concentrations calculated for each combination of LSL and CCT status from the EPA's regression modeling (see Exhibit 11 in section VI.E.1 of this preamble) was used to estimate the distribution of blood lead levels in males and females aged 8 to 79 years using the EPA's AALM tool. Each distinct LSL and CCT scenario was modeled and represented by water lead concentrations. Each scenario was run for females and males as the AALM tool requires that each sex be modeled separately. Model inputs include: water intake rates per age group, which are the same across sexes and were obtained from the EPA's 2011 Exposure Factors Handbook (Table 3–1); lead intake from food for each age group, which varies by sex and was calculated using values from appendix C of the AALM Technical Support Document (USEPA, 2019d); lead concentrations in soil and dust, which are consistent for all age groups and calculated as a weighted average based on data from the U.S. Department of Housing and Urban Development's (HUD) American Healthy Homes Survey (AHHS) I and II Lead Findings report (USHUD, 2021); soil and dust intake rates by age group up to age 21 were estimated by Ozkaynak et al. (2022), which used the EPA's SHEDS Soil and Dust model; and an air lead concentration of 0.01 $\mu g/m^3$ was used for all age groups and sexes based on national air monitoring results reporting in Cavender (2013).

The AALM modeling output provides the yearly estimated blood lead level (μg/dL) by age from 8 to 79 years for each status combination of sex, LSL, CCT, and point-of-use device or pitcher filter. For additional detailed information on the AALM inputs and modeling results, see chapter 5, section 5.4.2 of the final LCRI Economic Analysis (USEPA, 2024a). A summary of the AALM results by sex are presented in Exhibit 13.

EXHIBIT 13—ESTIMATES OF GEOMETRIC MEAN BLOOD LEAD LEVELS IN OLDER CHILDREN AND ADULTS (AGES 8–79) FOR EACH POSSIBLE DRINKING WATER LEAD EXPOSURE SCENARIO

Lead service line status	Corrosion control treatment status	Sex	Geometric mean blood lead level (μg/dL) for specified age group [1] in years from the AALM							
			8–15	16–19	20–29	30–39	40–49	50–59	60–69	70–79
LSL	None	Male	1.33	1.28	1.70	1.82	1.92	1.98	1.36	1.94
		Female	1.25	1.44	1.99	2.14	2.27	2.35	1.56	2.31
Partial LSL/GRR	None	Male	1.03	1.00	1.30	1.35	1.37	1.39	1.36	1.34
		Female	0.97	1.10	1.47	1.53	1.56	1.59	1.56	1.53
No LSL	None	Male	0.80	0.77	0.98	0.97	0.94	0.92	0.88	0.85
		Female	0.74	0.83	1.06	1.03	1.00	0.98	0.94	0.91
LSL	Partial	Male	1.08	1.04	1.36	1.42	1.45	1.47	1.45	1.42
		Female	1.01	1.15	1.55	1.62	1.66	1.70	1.67	1.65
Partial LSL/GRR	Partial	Male	0.92	0.89	1.14	1.16	1.16	1.15	1.12	1.10
		Female	0.85	0.96	1.26	1.28	1.28	1.28	1.25	1.22
No LSL	Partial	Male	0.80	0.77	0.98	0.97	0.94	0.92	0.88	0.85
		Female	0.74	0.83	1.06	1.03	1.00	0.98	0.94	0.91
LSL	Representative	Male	0.93	0.90	1.16	1.19	1.19	1.19	1.16	1.13
		Female	0.87	0.98	1.29	1.32	1.32	1.32	1.29	1.27
Partial LSL/GRR	Representative	Male	0.85	0.82	1.05	1.05	1.03	1.02	0.99	0.96
		Female	0.79	0.89	1.15	1.14	1.12	1.11	1.07	1.04
No LSL	Representative	Male	0.80	0.77	0.98	0.97	0.94	0.92	0.88	0.85
		Female	0.74	0.83	1.06	1.03	1.00	0.98	0.94	0.91

EXHIBIT 13—ESTIMATES OF GEOMETRIC MEAN BLOOD LEAD LEVELS IN OLDER CHILDREN AND ADULTS (AGES 8–79) FOR EACH POSSIBLE DRINKING WATER LEAD EXPOSURE SCENARIO—Continued

Lead service line status	Corrosion control treatment status	Sex	Geometric mean blood lead level (μg/dL) for specified age group [1] in years from the AALM							
			8–15	16–19	20–29	30–39	40–49	50–59	60–69	70–79
POU or pitcher filter	.....	Male	0.80	0.77	0.98	0.97	0.94	0.92	0.88	0.85
		Female	0.74	0.83	1.06	1.03	1.00	0.98	0.94	0.91

[1] The estimated values reported in this exhibit represent the mean blood lead level for the ages specified in the range. The AALM tool reports age-specific, yearly blood lead levels for each single year age that are used in the SafeWater LCR benefits model.

5. Quantifying and Monetizing Health Endpoints

The EPA quantified and monetized the change in four health endpoints in the final LCRI Economic Analysis. The endpoints are reductions: in IQ values and cases of ADHD in children, lower birth weights in children of women of childbearing age, and cases of cardiovascular disease premature mortality in adults. The concentration response functions for the four quantified health endpoints that have been extensively reviewed by the agency [30] and in the case of reductions in IQ losses, low birth weight and cardiovascular disease premature mortality, externally peer reviewed. Also, the approach used for IQ has been used in multiple prior rulemakings and undergone SAB review. The subsections below outline the methods the EPA used in analysis of each of these endpoints.

6. Estimating IQ Benefits

The EPA uses the SHEDS-Pb estimated set of potential geometric mean blood lead levels for children zero to seven years of age (presented in Exhibit 12 in section VI.E.3 of this preamble) as inputs in the modeling of IQ benefits for the final LCRI. The benefits analysis uses lifetime average blood lead values to determine estimates of avoided IQ loss that correspond to reductions in water lead concentrations resulting from changes in LSL/GRR, point-of-use device, pitcher filter, and CCT status at some point in a representative child's life (between ages zero and seven), and those made prior to the child's birth for those born seven years after the baseline (2021 LCRR) or final LCRI resulted in a water lead concentration status change. Therefore, the SafeWater LCR model, in each year of the analysis, calculates IQ benefits based on the cohort, or percent of the modeled population, that turns seven years of age in the year being analyzed. The SafeWater LCR model, for both the baseline (2021 LCRR) and final LCRI, tracks PWS implementation over the 35-year period of analysis. This data allows the model to determine the number of children that fall within each of the 11 possible LSL/GRR service line, CCT, point-of-use device, and pitcher filter lead exposure scenarios for each of the seven years prior to the year being modeled. The model then calculates a set of average lifetime blood lead levels for the possible LSL/GRR service line, CCT, point-of-use device, and pitcher filter exposure scenarios. The average lifetime blood lead levels are affected by both the change in LSL/GRR service line, CCT, point-of-use device, and pitcher filter status, and the years zero to seven in which the status change occurs. The model then applies these average lifetime blood lead level values to the appropriate percentage of the seven-year-old cohort (the percent of seven year olds that are estimated to experience the scenarios represented by the average lifetime blood lead levels) for that analysis year under both the baseline (2021 LCRR) and final LCRI requirements. The change in average lifetime blood lead levels for the seven-year-old cohort is then used to determine the incremental benefit of avoided IQ losses for both the baseline (2021 LCRR) and final LCRI.

In order to relate the child's estimated average lifetime blood lead level to an estimate of avoided IQ loss, the EPA selected concentration-response functions based on lifetime blood lead levels from two studies. For the high estimate function, the agency used a study by Lanphear et al. (2019). For the low estimate, the EPA selected the independent analysis by Crump et al. (2013), which is based on the same data used in Lanphear et al. (2019). Since the regulatory requirements are expected to reduce chronic exposures to lead, the EPA selected lifetime blood lead levels as the most appropriate measure to evaluate benefits, with lifetime defined for purposes of this particular analysis as age zero to seven. No threshold has been identified for the neurological effects of lead (Budtz-Jørgensen et al., 2013; Crump et al., 2013; Schwartz et al., 1991; USEPA, 2013). Therefore, the EPA assumes that there is no threshold for this endpoint and quantified avoided IQ loss associated with all blood lead levels.

The estimated value of an IQ point decrement is derived from the EPA's (2019c) reanalysis of Salkever (1995), which estimates that a one-point increase in IQ results in a 1.9 percent increase in lifetime earnings for males and a 3.4 percent increase in lifetime earnings for females. Lifetime earnings are estimated using the average of 10 American Community Survey (ACS) single-year samples (2008 to 2017) and projected cohort life tables from the Social Security Administration. Projected increases in lifetime earnings are then adjusted for the direct costs of additional years of education and forgone earnings while in school. The EPA's (2019c) reanalysis of Salkever (1995) estimates a change of 0.08 years of schooling per change in IQ point for males and a change of 0.09 years of schooling per change in IQ point for females resulting from a reduction in lead exposure.

To estimate the uncertainty underlying the model parameters of the Salkever (1995) reanalysis, the EPA (2019c) used a bootstrap approach to estimate a distribution of model parameters over 10,000 replicates (using random sampling with replacement). For each replicate, the net monetized value of a one-point increase in IQ is subsequently estimated as the gross value of an IQ point based on a lifetime of earnings, less the value of additional education costs and foregone earnings while in school. The EPA uses an IQ point value discounted to age seven. Based on the EPA's reanalysis of Salkever (1995), the mean value of an IQ point in 2022 dollars and discounted to age seven, is $42,226 using a two

[30] The EPA undertook a rigorous process to identify concentration response functions to quantify benefits. This included reviewing all available studies which could be used to develop quantitative relationships between changes in lead exposure and/or changes in blood lead levels and changes in health endpoints. The EPA evaluated the studies for quality and potential biases. The EPA then drafted a separate report for each health endpoint. In addition to the quality review findings, each report provides quantitative estimates, based on the identified functions, of potential changes in the health endpoint and was reviewed by EPA experts and/or externally peer reviewed.

percent discount rate.[31] See appendix F of the final LCRI Economic Analysis (USEPA, 2024a) for a sensitivity analysis of the value of avoided IQ loss benefits based on Lin et al. (2018).

The EPA used the estimated changes in lifetime (age zero to seven) average blood lead levels that result from changes in LSL/GRR, CCT, point-of-use device, and/or pitcher filter status as inputs to the concentration response functions estimated by Lanphear et al. (2019) and Crump et al. (2013). The resultant high and low estimates of annual avoided IQ decrements per change in LSL/GRR, CCT, point-of-use device, and/or pitcher filter status change are then summed and multiplied by the EPA's reanalyzed Salkever (1995) values per IQ point. These high and low annual benefit values for each year of the period of analysis were then further annualized over the period of analysis using a two percent discount rate. Note that this analysis quantifies the benefits from water quality changes that occur during the 35-year period of analysis, but also accounts for the fact that monetized IQ benefits continue to accrue beyond the 35-year period because they are not experienced by modeled children until they reach adulthood. See Exhibit 14 in section VI.E.10 of this preamble for the estimated benefit from avoided IQ losses from lead and GRR service line replacement, CCT installation and re-optimization, point-of-use device program operation, and the provision of pitcher filters in systems with multiple ALEs as a result of the baseline (2021 LCRR), the final LCRI, and the incremental difference between the two sets of regulatory requirements under both the low and high scenarios. For detailed information on the quantification and monetization of the IQ benefits associated with the final LCRI see chapter 5, sections 5.5.1 and 5.5.2 of the final LCRI Economic Analysis (USEPA, 2024a).

7. Estimated ADHD Benefits

This is the first regulation in which the EPA has estimated benefits of avoided cases of ADHD associated with reductions in lead exposure; as discussed below the approach for quantifying such benefits will continue to evolve as our understanding of the potential relationship improves. As described in appendix D, the USEPA ISA (2024b) strengthened the conclusions of the 2013 ISA and concluded that there was a causal relationship between lead exposure and inattention, impulsivity, and hyperactivity in children based on recent studies of children with group mean BLLs ≤5 μg/dL. The 2024 ISA states that ''prospective studies of ADHD, including a study of clinical ADHD that controlled for parental education and SES [Socioeconomic status], although not quality of parental caregiving reported positive associations'' (USEPA, 2024b. p. IS–30). The causes of ADHD are not fully understood, but research suggests a number of potential causes, including genetics, exposure to environmental toxins, prenatal cigarette smoking or alcohol intake, and brain changes (Tripp et al., 2009; Pliszka et al., 2007). The EPA's 2013 lead ISA stated that in children, ''attention was associated with biomarkers of Pb exposure representing several different lifestages and time periods. Prospective studies did not examine a detailed Pb biomarker history, and results do not identify an individual critical lifestage, time period, or duration of Pb exposure associated with attention decrements in children. Associations in prospective studies for attention decrements with tooth Pb level, early childhood average and lifetime average blood Pb levels point to an effect of cumulative Pb exposure.'' The 2024 ISA addresses the uncertainties presented in the 2013 ISA by stating that ''The largest uncertainty addressed by the recent evidence base is the previous lack of prospective studies examining ADHD (Appendix 3.5.2.4–3.5.2.5). The bulk of the recent evidence comprises prospective studies that establish the temporality of the association between Pb [lead] exposure and parent or teacher ratings of ADHD symptoms and clinical ADHD. Across studies, associations were observed with tooth Pb concentrations, childhood BLLs (<6 μg/dL), and with maternal or cord BLLs (2–5 μg/dL).'' The available studies relating blood lead to ADHD use one-time BLLs, while it is possible that cumulative exposure is also important. However, one-time and cumulative measures of BLLs in children are often correlated. Therefore, the EPA has chosen diagnosed cases of ADHD as an endpoint in this benefits analysis, because literature exists linking ADHD diagnosis to these monetizable outcomes. The larger body of literature on attention, impulsivity, and hyperactivity symptoms in children supports this association. The EPA chose a higher and lower concentration-response function for the estimates of avoided cases to partially address the uncertainty in the most appropriate function to use in estimating avoided cases due to the rule. Additional future research will help to further understand the critical exposure window (thus exposure metric), the mode of action of lead in the development of ADHD and/or related symptoms, and the interplay with genetic factors and exposures to other substances.

The approach used to quantify ADHD here is based on review and analysis that Abt Associates (Abt Associates, 2022a conducted under contract to the EPA. The benefits analysis uses average blood lead values to determine estimates of avoided diagnosed ADHD cases that correspond to reductions in water lead concentrations resulting from changes in LSL, point-of-use device, pitcher filter, and CCT status. The EPA used the concentration-response functions from two studies to bracket the estimated number of ADHD cases avoided. The EPA's high estimate is based on a study by Froelich et al. (2009), and the low estimate is based on a study by Ji et al. (2018). The EPA utilized the AALM estimated set of potential geometric mean blood lead levels for the 8- to 15-year-old age group (presented in Exhibit 13 in section VI.E.4 of this preamble) as inputs in the modeling of ADHD benefits when using the Froelich et al. (2009) concentration response function to estimate the high scenario. Because Ji et al. (2018) measured early childhood blood lead levels in their study, the EPA used the set of potential geometric mean blood lead levels estimated by the SHEDS-Pb model (shown in Exhibit 12 in section VI.E.3 of this preamble) as the input values for the Ji et al. (2018) concentration response function for the low ADHD benefits scenario.

As described above in section VI.E of this preamble, the SafeWater LCR model, with the strengths and limitations characterized in section VI.C of this preamble and sections 4.2.2 and 5.7 of the final LCRI Economic Analysis (USEPA, 2024a), is able to track the population in water systems that are affected by changes in LSL/GRR service line, point-of-use device, pitcher filter, and CCT status and the resultant changes in water and blood lead concentration for each population group per year of the 35-year period of

[31] Note that the EPA's use of the term ''two percent discount rate'' with regard to the calculation of the IQ point high and low values (which represent the present value of the change in lifetime earnings) is shorthand for a declining discount rate that begins with a two percent discount rate for the years 2024–2079, a 1.9 percent discount rate used for the years 2080–2094, and a 1.8 percent discount rate used in years 2095–2102. This declining rate structure was implemented to comply with updates to the OMB Circular A–4 (OMB, 2023) guidance, which indicates that a declining discount rate may be used to capture the uncertainty in the appropriate discount rate over long time horizons like lifetime labor force participation.

analysis. These changes in blood lead levels for each population group are then used to estimate the number of avoided cases of ADHD using the Froelich et al. (2009) function for the high benefits scenario and the Ji et al. (2018) function for the low benefits scenario.

The EPA uses information on ADHD costs estimated from Doshi et al. (2012) in the monetization step. The Doshi et al. (2012) costs include incremental child and adolescent costs for patient and family health care, family productivity losses, educational expenses, and justice system expenses. The cost estimate also includes incremental adult patient and family health care and justice system costs. The adult costs are adjusted downward to account for the fact that not all ADHD cases persist into adulthood. Because there is uncertainty over what percent of ADHD cases persist into adulthood, the EPA uses a high and low estimate of the ADHD cost of illness based on a high and low estimate of ADHD persistence into adulthood. The high estimate assumes that 90 percent of childhood cases of ADHD persist into adulthood, based on Sibley et al. (2022). The low estimate is based on Barbaresi et al. (2013), which reports a 29.3 percent persistence rate. The high and low persistence rates are both used to adjust the Doshi et al. (2012) healthcare and justice system benefits realized at ages 18 and older for an avoided case of ADHD diagnosed in childhood.

In order to apply these avoided cost values in the benefits analysis, the EPA produced two net present value estimates for all avoided ADHD costs incurred through age 64. The first value used the Doshi et al. (2012) costs adjusted by the 29.3 percent adult persistence rate discounted back to age seven for use with Ji et al. (2018) in the estimation of the low benefit scenario (Ji et al. (2018) used blood lead levels measured in young children). The second value used the Doshi et al. (2012) costs adjusted by the 90 percent adult persistence rate discounted back to age 11 for use with the Froelich et al. (2009) function in estimating the high benefits scenario (Froelich et al. (2009) used blood lead levels measured in children 8 to 15 years of age so the EPA selected age 11 as the average value). The net present values of both the low and high avoided costs were computed using a two percent discount rate. The costs were also adjusted to 2022 dollars. The estimated per-case ADHD avoided costs under the high benefits scenario and discounted at a two percent rate to age 11 is $184,194. The per-case ADHD avoided costs under the low benefits scenario and discounted at a two percent rate to age seven is $128,559.

The estimated number of ADHD cases avoided under the low and high benefits scenarios in each year of the 35-year period of analysis was then multiplied by the corresponding net present value to compute the avoided cost per year. This annual stream of benefits was annualized at two percent over the 35-year period of analysis, and further discounted to year one of the period of analysis. See Exhibit 14 in section VI.E.10 of this preamble for the estimated benefit from avoided ADHD cases from lead and GRR service line replacement, CCT installation and re-optimization, point-of-use device program operation, and the provision of pitcher filters in systems with multiple ALEs as a result of the baseline (2021 LCRR), the final LCRI, and the incremental difference between the two sets of regulatory requirements under both the low and high scenarios. For detailed information on the quantification and monetization of the ADHD benefits associated with the final LCRI see chapter 5, sections 5.5.3 and 5.5.4 of the final LCRI Economic Analysis (USEPA, 2024a).

8. Estimated Low Birth Weight Benefits

Blood lead levels from the AALM tool for women of childbearing age (17 to 45 years of age) were used to estimate reduced lower birth weight in infants. The concentration response function characterizing the relationship between changes in female blood lead level and reductions in lower birth weight in infants comes from a study by Zhu et al. (2010). The agency used the Zhu et al. (2010) function for both the low- and high-benefits scenarios because the EPA did not identify a second concentration response function based on a similarly high-quality dataset and analysis; however, several other smaller studies were identified that support the relationship between lead exposures and reduced birth weight (see the final LCRI Economic Analysis (USEPA, 2024a), appendix D, section D.3.6 and Abt Associates (2022b) for additional material on the relationship between maternal blood lead and changes in birth weight). The choice of Zhu et al. (2010) was peer reviewed (Versar, 2015).

The valuation of changes in birth weight is based on a review and analysis that Abt Associates (2022b) conducted, which was finalized after undergoing peer review coordinated by the EPA. Their analysis of U.S. Department of Health and Human Services, Medical Expenditure Panel Survey data found that birth weight in the very low birth weight/low birth weight and normal ranges influences inpatient hospital stays. In the EPA's LCRI analysis, annual average inpatient expenditures (avoided costs) by initial birth weight (2–10 pounds) are the product of: (1) the predicted probability of having at least one medical event in the period, and (2) the mean conditional expenditures (*i.e.,* conditional on observing at least one medical event in the period). The mean conditional expenditures have been estimated based on projected initial birth weight and projected increases in weight of 0.04, 0.11, and 0.22 pounds.

Generally, as initial birth weight increases, the size of avoided expenditures deceases. Similarly, as expected increase in weight goes up, the avoided costs increase. For example, at a starting birth weight of 3.3 pounds, an increase in birth weight of 0.22 pounds results in a decrease in inpatient hospital expenditures of $1,652 (2010$), but the cost saving is less than $100 at a starting birth weight of 5.5 pounds. In applying the average inpatient avoided cost values to the LCRI case, the EPA adjusted the study's 2010 cost estimates to 2022 dollars. The agency also assumed that baseline birth weights for the affected infants are equal to the distribution of birth weights in the United States. See Exhibit 14 (discounted at two percent), in section VI.E.10 of this preamble, for the estimated benefit from avoided low birth weight impacts from lead and GRR service line replacement, CCT installation and re-optimization, point-of-use device program operation, and the provision of pitcher filters in systems with multiple action level exceedances as a result of the LCRR, the final LCRI, and the incremental difference between the two sets of regulatory requirements under both the low and high scenarios. For detailed information on the quantification and monetization of the low birth weight benefits associated with the final LCRI see chapter 5, sections 5.5.5 and 5.5.6 of the final LCRI Economic Analysis (USEPA, 2024a).

9. Estimated Cardiovascular Disease Premature Mortality Benefits

The EPA's estimation of benefits from avoided cardiovascular disease (CVD) associated premature mortality follows the methodology outlined in Brown et al. (2020) and Abt Associates (2023). The latter document is a revised report incorporating feedback from an independent peer review of an earlier draft of the report (MDB Incorporated, 2019) that articulated the strengths and limitations of our understanding of the relationship between lead exposure and cardiovascular disease premature

mortality, and thus the strengths and limitations of the method presented. These strengths and limitations are discussed in more detail in the final LCRI Economic Analysis, chapter 5 (USEPA, 2024a). In order to bracket the reduction in CVD premature mortality risk avoided, and the calculated monetized benefits, associated with reductions in blood lead levels resulting from lead and GRR service line replacement, CCT installation and re-optimization, point-of-use device program operation, and pitcher filter distribution accruing under the final LCRI, the EPA selected two concentration response functions. The high scenario function is based on the blood lead level <5 μg/dL analysis in Lanphear et al. (2018), and the low scenario function is based on Aoki et al. (2016). While additional concentration response functions for this relationship are available as detailed in Brown et al. (2020) and Abt Associates (2023), these two functions represent, respectively, the highest and lowest changes in cardiovascular disease premature mortality associated with a given change in adult blood lead level available in peer-reviewed studies estimating continuous functions using high quality, nationally representative datasets. The EPA will evaluate new and novel data as they become available, and will consider updating this methodology for estimating cardiovascular premature mortality effects of changes in adult lead exposure as appropriate.

In order to value the reduced CVD premature mortality risk, the EPA uses the same approach it uses in estimating the benefits associated in reductions of particulate matter and ozone in air pollution regulations. Specifically, the EPA draws on the published academic surveys about how much people are willing to pay for small reductions in their risks of dying from adverse health conditions that may be caused by environmental pollution. In the scientific literature, these estimates of willingness to pay for small reductions in mortality risks are often referred to as the ''value of a statistical life.'' This is because these values are typically reported in units that match the aggregate dollar amount that a large group of people would be willing to pay for a reduction in their individual risks of dying in a year, such that we would expect one fewer death among the group during that year on average. The EPA's value of a statistical life was adjusted to 2022 dollars, and the resulting value of $12.98 million was applied to each avoided case, or reduction in population risk resulting in one fewer CVD death.[32] Avoided cases of CVD premature mortality are estimated for each annual time step, over the 35-year period of analysis in the SafeWater LCR model, for all adults ages 40 to 79, using the yearly blood lead levels modeled by the AALM, and shown in Exhibit 13, for both the low and high scenarios (as defined by the concentration response functions and the estimated range of PWSs that will exceed the action level under the baseline (2021 LCRR) and final LCRI).

Under both scenarios, the SafeWater LCR model is able to track the population in water systems that are affected by changes in LSL/GRR service line, point-of-use device, pitcher filter, and CCT status and the resultant changes in water and blood lead concentration for each population group per year of the 35-year period of analysis. These changes in blood lead levels for each population group are then used to estimate the number of avoided cases of CVD premature mortality using the <5 μg/dL Lanphear et al. (2018) function in the high scenario and the Aoki et al. (2016) function for the low scenario, assuming baseline cases of CVD premature mortality due to lead follow the same distribution of all cardiovascular mortality cases in the U.S. population.

See Exhibit 14 (discounted at two percent), in section VI.E.10 of this preamble, for the estimated benefit from avoided CVD premature mortality risk from lead and GRR service line replacement, CCT installation and re-optimization, point-of-use device program operation, and the provision of pitcher filters in systems with multiple ALEs as a result of the baseline (2021 LCRR), the final LCRI, and the incremental difference between the two sets of regulatory requirements under both the low and high scenarios. For detailed information on the quantification and monetization of the CVD premature mortality benefits associated with the final LCRI see chapter 5, sections 5.5.7 and 5.5.8 of the final LCRI Economic Analysis (USEPA, 2024a).

[32] The EPA uses a value of a statistical life (VSL) of $12.98 million, which is estimated using the EPA's (2014) recommended VSL of $4.8 million in 1990 dollars and EPA's (2014) recommended method for adjusting the VSL for income growth and inflation. The $4.8 value in 1990 dollars is updated to the $12.98 million in 2022 dollars by adjusting for inflation using the U.S. Bureau of Labor Statistics' (2019) Consumer Price Index and adjusting it for income growth using real gross domestic product (GDP) per capita and an income elasticity of 0.4.

10. Total Monetized Benefits

Exhibit 13 shows the estimated, monetized national annualized total benefits, under the low and high scenarios,[33] associated with the baseline (2021 LCRR), the final LCRI, and the increment of change between the two, discounted at two percent. The benefits from the final LCRI result from the activities performed by water systems which are expected to reduce risk to the public from exposure to lead in drinking water at the tap. The EPA quantifies and monetizes some of this health risk reduction from lead exposure by estimating the decrease in lead exposures accruing to both children and adults from the installation and re-optimization of CCT, service line replacement, the implementation of point-of-use filter devices, and the provision of pitcher filters in systems with multiple ALEs.[34] The total and incremental benefits reported are subdivided into estimated health endpoint benefits stemming from avoided reductions in IQ and cases of ADHD in children, lower birth weights in children of women of childbearing age, and cases of CVD premature mortality in adults. The estimated monetized benefits associated with avoided premature mortality are much larger than those associated with neurodevelopmental impacts in children. Still the public health impact of this regulation is important for children given the life-long impact of the early life health effects, the potential of health impacts from cumulative lead exposures, and the fact that there are several other avoided health impacts that were not quantified. See appendix D of the final LCRI Economic Analysis (USEPA, 2024a) for additional information on the non-quantified health impacts of lead exposure.

The total annualized monetized benefits range from $13.5 to $25.1 billion at a two percent discount rate in 2022 dollars. The Exhibit 14 also details the proportion of the annualized

[33] The low and high benefits scenarios are defined by: differences in the estimated number of systems experiencing lead ALEs based on calculated lead tap sampling 90th percentile values; the concentration-response functions that characterize how reductions in blood lead levels (caused be changes in lead exposure) translate into estimates of avoided IQ reductions, cases of ADHD, and CVD premature mortality; two alternative high and low valuations for an IQ point; and high and low estimates of the ADHD cost of illness.

[34] Note that because of the lack of granularity in the assembled lead concentration profile data, with regard to CCT status when samples were collected (see section VI.E.1 of this preamble), the benefits of small improvements in CCT, like those resulting from the Distribution System and Site Assessment rule requirements, cannot be quantified in the model.

benefits attributable to each health endpoint category of monetizable benefit. For additional information on estimated health endpoint benefits subdivided by final LCRI regulatory activity see chapter 5 of the final LCRI Economic Analysis (USEPA, 2024a). See section VI.F.2 of this preamble for information on non-quantifiable benefits. In addition to the uncertainties in the dose response functions and the quantification of the economic impacts noted above and in chapter 5 of the final LCRI Economic Analysis (USEPA, 2024a), the estimated benefits are contingent on the assumptions in the baseline—principally, whether or not the provisions of the prior 2021 LCRR to remove LSLs have been successfully met. Therefore, the EPA provides in appendix C of the final LCRI Economic Analysis for the final rule (USEPA, 2024a) estimated national costs and benefits of the LCRI utilizing the regulatory requirements of the pre-2021 LCR as a baseline.

EXHIBIT 14—ESTIMATED NATIONAL MONETIZED ANNUAL BENEFITS—2 PERCENT DISCOUNT RATE

[millions of 2022 USD]

	Low estimate			High estimate		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Annual IQ Benefits	$1,208.5	$6,831.3	$5,622.8	$3,279.0	$10,963.0	$7,684.0
Annual Low-Birth Weight Benefits	1.0	5.4	4.4	1.8	5.7	3.9
Annual ADHD Benefits	33.6	196.3	162.7	179.9	599.5	419.6
Annual Adult CVD Premature Mortality Benefits	1,750.7	9,454.3	7,703.6	8,174.9	25,210.0	17,035.1
Total Annual Benefits	2,993.8	16,487.3	13,493.5	11,635.6	36,778.2	25,142.6

Acronyms: LCRI = Lead and Copper Rule Improvements; IQ = intelligence quotient; ADHD = attention-deficit/hyperactivity disorder; CVD = cardiovascular disease.

The EPA is committed to understanding and addressing climate change impacts in carrying out the agency's mission of protecting human health and the environment. While the EPA is not required by SDWA 1412(b)(3)(C)(i)(III) to consider climate disbenefits under the HRRCA, the agency has estimated the potential climate disbenefits caused by increased greenhouse gas (GHG) emissions associated with the operation of CCT at drinking water treatment facilities and the use of construction and transport vehicles in the replacement of lead and GRR service lines. As explained in section VI.A of this preamble, this disbenefits analysis is presented solely for the purpose of complying with Executive Order 12866. The EPA analysis found that the climate disbenefits of the final LCRI from CO_2, CH_4, and N_2O emissions associated with increased electricity use in the operation of CCT at drinking water treatment facilities and the direct combustion of fossil fuels from the use of construction and transport vehicles in the replacement of lead and GRR service lines resulted in monetized annualized values that range from $2.1 million under the low scenario to $2.0 million under the high scenario discounted at two percent, in 2022 dollars. These disbenefit values constitute less than 0.02- 0.01 percent of the monetized benefits of the rule, at a two percent discount rate, under the low and high scenarios, respectively. Note that the EPA did not quantify the potential emissions changes associated with the production and delivery of CCT chemicals, the construction required for the installation of CCT technology, and the production and transport of copper and plastic replacement piping and plumbing components. The EPA recognizes that many activities directly and indirectly associated with drinking water treatment produce GHG emissions; however, the agency determined that it could not accurately quantify all the potential factors that could increase and decrease greenhouse gas emissions that are not solely attributable to the onsite CCT operations and service line replacement field operations directly required by the rule. The EPA also notes that this analysis uses the 2021 LCRR as a baseline in order to calculate the incremental GHG emissions.

F. Cost-Benefit Comparison

This section summarizes and describes the numeric relationship between the monetized incremental costs and benefits of the final LCRI regulatory requirements. The section also discusses both the non-monetized costs and benefits of the rulemaking. Exhibit 15 compares the annualized monetized incremental costs and benefits of the final LCRI for the low and high scenarios. The net annualized incremental monetized benefits, under the low and high scenarios, range from $12.0 to $23.2 billion at a two percent discount rate in 2022 dollars.

EXHIBIT 15—COMPARISON OF ESTIMATED MONETIZED NATIONAL ANNUALIZED INCREMENTAL COSTS TO BENEFITS OF THE LCRI—2 PERCENT DISCOUNT RATE

[millions 2022 USD]

PWS annual costs	Low scenario	High scenario
Annualized Incremental Costs	$1,468.8	$1,953.8
Annualized Incremental Benefits	13,493.5	25,142.6
Annual Net Benefits	12,024.7	23,188.8

1. Non-Monetized and Non-Quantified Costs

The final LCRI is expected to result in additional phosphate being added to drinking water to reduce the amount of lead leaching into the water in the distribution system. Although the downstream ecological impacts are not ''likely to occur solely as a result of compliance'' with the final LCRI, and therefore are not costs considered as part of the HRRCA under SDWA, section 1412(b)(3)(C)(i)(III), the EPA for informational purposes has quantified incremental phosphorus loadings and outlined potential downstream ecological impacts. The EPA's cost model estimated that, nationwide, the final LCRI may result in post-WWTP total incremental phosphorus loads to receiving waterbodies increasing over the period of analysis, under the low and high scenarios, by a range of 225,000 to 272,000 pounds fifteen years after promulgation, and by a range of 216,000 to 260,000 pounds at year 35. At the national level, under the high scenario, this additional phosphorous loading to waterbodies is relatively small, less than 0.03 percent of the total phosphorous load deposited annually from all other anthropogenic sources. However, national average receiving waterbody phosphorus load impacts may obscure significant localized ecological impacts. Impacts, such as eutrophication, may occur in water bodies without restrictions on phosphate deposits, or in locations with existing elevated phosphate levels. See chapter 4, section 4.5.2 of the final LCRI Economic Analysis (USEPA, 2024a) for additional information.

The EPA also notes that there exist unquantified costs associated with service line replacement. Costs associated with the disruption of normal traffic patterns in communities implementing service line replacement programs are not accounted for in the monetized cost estimates of the rule. This impact to traffic could be significant in localized areas where lead, GRR, and unknown service lines are co-located with high traffic roads. During service line replacement, worksite activities and characteristics have the potential to increase car and pedestrian accidents. Also given the necessity to shut off water service to buildings and residences during service line replacement, the probability of fire damage and negative health/sanitation impacts may increase. Given that service line replacement takes a relatively small amount of time (four hours on average), the low probability of accidents and fire, the advance notice provided to building occupants, and alternative local sources of water available in emergencies (*e.g.,* fire hydrants) it is unlikely that these unquantified costs are nationally significant.

2. Non-Quantified and Non-Monetized Benefits

In addition to the benefits monetized in the final LCRI analysis for reductions in lead exposure, there are several other benefits that are not quantified. The risk of adverse health effects due to lead exposure that are expected to decrease as a result of the final LCRI are summarized in appendix D of the final LCRI Economic Analysis (USEPA, 2024a) and are expected to affect both children and adults. The EPA focused its non-quantified impacts assessment on the endpoints identified using two comprehensive U.S. Government documents summarizing the literature on lead exposure health impacts. These documents are the EPA's Integrated Science Assessment for Lead (ISA) (USEPA, 2024b); and the U.S. Department of Human and Health Services' National Toxicology Program (NTP) Monograph on Health Effects of Low-Level Lead (NTP, 2012). Both sources present comprehensive reviews of the literature as of the time of publication on the risk of adverse health effects associated with lead exposure. The EPA summarized those endpoints to which either the EPA ISA or the NTP Lead Monograph assigned one of the top two tiers of confidence in the relationship between lead exposure and the risk of adverse health effects. These endpoints include cardiovascular morbidity effects, renal effects, reproductive and developmental effects (apart from ADHD and low birth weight initial hospitalization), immunological effects, neurological effects (apart from children's IQ), and cancer.

There are a number of final LCRI requirements that reduce lead exposure to both children and adults that the EPA could not quantify. The final rule will require additional lead public education requirements that target consumers directly, schools and child care facilities, health agencies, and people living in homes with lead and GRR service lines. Increased education will lead to additional averting behavior on the part of the exposed public, resulting in reductions in the negative impacts of lead. The rule will also require the development of service line inventories that include additional information on lead connectors and make the location of the lead content service lines publicly accessible. This will give potentially exposed consumers more information and will provide potential home buyers with this information as well. Homeowners may request LSL/GRR service line removal earlier than a water system might otherwise plan on replacing the line. The benefits of moving these lead and GRR service line removals forward in time are not quantified in the analysis of the final LCRI. Because of the lack of granularity in the lead tap water concentration data available to the EPA for the regulatory analysis, the benefits of small improvements in CCT to individuals residing in homes with lead content service lines, like those modeled under the Distribution System and Site Assessment requirements, are not quantified.

The EPA also did not quantify the CCT benefits of reduced lead exposure from lead-containing plumbing components (not including from lead and/or GRR service lines) to individuals who reside in both: (1) homes that have lead and/or GRR service lines but also have other lead-containing plumbing components, and (2) those that do not have lead and/or GRR service lines but do have lead-containing plumbing components.[35] The EPA has determined that the final LCRI requirements may result in reduced lead exposure to the occupants of both these types of buildings as a result of improved monitoring and additional actions to optimize CCT. In the analysis of the LCRI, the number of both homes served by lead and/or GRR service lines and homes not served by lead and/or GRR service lines potentially affected by water systems increasing their corrosion control during the 35-year period of analysis is 5.2 million in the low scenario and 9.1 million in the high scenario. Some of these households may have leaded plumbing materials apart from lead or GRR service lines, including lead connectors, leaded brass fixtures, and lead solder. These households could potentially see reductions in tap water lead concentrations.

Some researchers have pointed to the potential for CCT cobenefits associated with reduced corrosion, or material damage, to plumbing pipes, fittings, and fixture, and appliances that use water

[35] Although the EPA estimated an average lead concentration for the first 10 liters of drinking water to inform the water lead concentration estimates used to quantify benefits the EPA could not calculate the CCT benefits associated with lead containing plumbing components (apart from lead and/or GRR service lines), because the EPA used a pooled estimate for all CCT conditions in residences with no lead and/or GRR service lines in place (See the Final LCRI Economic Analysis (USEPA(2024a) chapter 5, section 5.2.3 for additional information).

owned by both water systems and homeowners (Levin, 2023). The corrosion inhibitors used by systems that are required to install or re-optimize OCCT as a result of the final LCRI are expected to result in additional benefits associated with the increased useful life of the plumbing components and appliances (*e.g.,* water heaters), reduced maintenance costs, reduced treated water loss from the distribution system due to leaks, and reduced potential liability and damages from broken pipes in buildings that receive treated water from the system. The replacement of GRR service lines may also lead to reduced treated water loss from the distribution system due to leaks (AwwaRF and DVGW-Technologiezentrum Wasser, 1996). The EPA did not have sufficient information to estimate these impacts nationally for the final rule analysis.

Additionally, the risk of adverse health effects associated with copper that are expected to be reduced by the final LCRI are summarized in appendix E of the final LCRI Economic Analysis (USEPA, 2024a). These risks include acute gastrointestinal symptoms, which are the most common adverse effect observed among adults and children. In sensitive groups, there may be reductions in chronic hepatic effects, particularly for those with rare conditions such as Wilson's disease and children pre-disposed to genetic cirrhosis syndromes. These diseases disrupt copper homeostasis, leading to excessive accumulation that can be worsened by excessive copper ingestion (National Research Council, 2000).

3. Reaffirm Cost-Benefit Determination

When proposing an NPDWR, SDWA section 1412(b)(4)(C) requires that the Administrator shall publish a determination as to whether the benefits of the proposed rule justify, or do not justify, the costs based on the analysis conducted under SDWA section 1412(b)(3)(C). Note the SDWA section 1412(b)(3)(C) analysis the HRRCA, the components of which are described in introduction to section VI. For the proposed LCRI, the Administrator determined that the quantified and non-quantifiable benefits of the proposed LCRI NPDWR justified the quantifiable and non-quantifiable costs.

The EPA fully weighed the costs and benefits of the final rule HRRCA analysis, as discussed in the final LCRI Economic Analysis of the action, the agency considered the monetized values (discounted at two percent in addition to those discounted at three and seven percent,[36]) the potential impacts of the non-quantifiable uncertainties, the non-quantifiable costs and benefits, and public comments received by the agency related to the quantitative and qualitative assessment of the costs and benefits. For the final rule, the EPA is reaffirming the Administrator's determination made at proposal that the quantified and non-quantifiable benefits of the rule justify its quantified and non-quantifiable costs.

As indicated in section VI.F of this preamble, the monetized costs and benefits result in net annualized incremental benefits that range from $12.0 to $23.2 billion under the low and high scenarios at a two percent discount rate in 2022 dollars. The EPA estimated the monetized net benefits of the final LCRI under low and high bracketing scenarios in order to capture the variability in system characteristics and the significant uncertainty associated with a set of lead specific data inputs which drive both the estimated costs and benefits in the SafeWater LCR model. With regard to costs, the uncertain variables which define the measurable difference between the low and high scenarios, are the number of PWSs that will exceed the lead action level under the revised tap sampling requirements, the cost of lead and GRR service line replacement, and the cost of CCT. The difference between low and high benefits scenarios are driven by the number of PWSs that will exceed the action level under the revised tap sampling requirements; the concentration response functions that estimate the impact lead concentrations have on avoided reductions in IQ, cases of ADHD in children, and cases of cardiovascular disease premature mortality in adults; and high and low estimates of the ADHD cost of illness.

There are also a number of potentially significant non-quantifiable and non-monetized costs and benefits that weight into the reaffirmation of the determination of benefits justifying costs. On the cost side of the equation the EPA considered the potential temporary costs associated with service line replacement including traffic congestion, increased probability of vehicular and pedestrian accidents, fire damage, and negative sanitation impacts. With regard to benefits, the final LCRI will reduce the non-quantifiable harmful impacts of lead exposure which include cardiovascular morbidity effects, renal effects, reproductive and developmental effects (apart from ADHD and low birth weight initial hospitalization), immunological effects, neurological effects (apart from children's IQ), and cancer. The EPA analysis did not quantify the impacts from changes in consumer averting behavior, such as flushing lines before drinking water is drawn, filter use, or customer-initiated service line replacement due to the final LCRI's additional lead public education requirements that target all potential affected consumers directly, schools and child care facilities, health agencies, and people living in homes with lead and GRR service lines; and the development of service line inventories that include lead connector information with the requirement for public access to the information. The analysis was also unable to quantify the potentially significant benefits of reducing lead concentrations in drinking water from: all households with leaded plumbing inside the home in water systems where the final LCRI requires installation or re-optimization of OCCT; and all households in systems implementing small improvements in OCCT because of the Distribution System and Site Assessment final rule requirements. Corrosion inhibitors used by systems that are required to install or re-optimize OCCT as a result of the final LCRI would experience an additional benefit in terms of the increased useful life of the plumbing components and appliances (*e.g.,* water heaters), reduced maintenance costs, reduced treated water loss from the distribution system due to leaks, and reduced potential liability and damages from broken pipes in buildings that receive treated water from the system. The final LCRI is also expected to reduce the potential for negative copper exposure heath impacts. Taken as a group the quantified and non-quantifiable benefits outweigh the quantified and non-quantifiable costs leading to the determination that the final LCRI's benefits justify the costs.

Note that although not included in the SDWA HRRCA analysis the EPA, as part of its Executive Order 12866 assessment of the final LCRI, has also considered: (1) the monetized cost and non-quantifiable negative environmental impacts the incremental phosphorus loadings to WWTPs and receiving waterbodies cause by the increased use

[36] The EPA used the two percent discount rate as prescribed by the Office of Management and Budget's updated Circular A–4 (OMB Circular A–4, 2023). Because the EPA provided cost estimates discounted at three and seven percent for the proposed LCRI based on OMB guidance which was in effect at the time of the proposed rule analysis (OMB Circular A–4, 2003), the agency has also calculated the cost impacts at both the three and seven percent discount rates. See the final LCRI Economic Analysis (USEPA, 2024a), appendix F for results.

of orthophosphate as a corrosion inhibitor; and (2) the climate disbenefits resulting from the greenhouse gas emissions associated with increased energy consumption as a result of the regulatory requirements of the final LCRI.[37] In the case of additional phosphorus loadings, the EPA estimates that incremental national annualized WWTP costs associated with the final LCRI will range from $120,000 to $300,000 at a two percent discount rate in 2022 dollars.[38] In addition to the monetized impacts increased phosphorus reaching receiving waterbodies raises the potential for non-quantified costs associated with eutrophication, HABs, and other significant localized ecological impacts. With regard to the disbenefits resulting from greenhouse gas emissions, the EPA analysis found that the climate disbenefits of the final LCRI from CO2, CH_4, and N2O emissions associated with increased electricity use in the operation of CCT at drinking water treatment facilities and the direct combustion of fossil fuels from the use of construction and transport vehicles in the replacement of LSLs and GRR service lines resulted in monetized annualized values that range from $2.1 million under the low scenario to $2.0 million under the high scenario discounted at two percent, in 2022 dollars. These disbenefit values constitute less than 0.02–0.01 percent of the monetized benefits of the rule, at a two percent discount rate, under the low and high scenarios, respectively. For additional information on the impacts of the additional phosphorus loadings at WWTPs and receiving waterbodies, and the climate disbenefits of incremental greenhouse gas emissions see the final LCRI Economic Analysis (USEPA, 2024a), chapter 4, section 4.5, and chapter 5, section 5.9, respectively.

G. Alternative Regulatory Options Considered

The Office of Management and Budget recommends that ''it is generally informative to explore modifications of some or all of a regulation's key individual attributes or provisions'' (OMB, 2023). Pursuant to this guidance, the EPA considered alternative regulatory options when developing the final LCRI related to: the required lead action level; the service line replacement rate; the definition of lead content to be replaced as part of the service line replacement program; the potential for deferred deadlines under the service line replacement program; changes to the lead tap sampling schedule; the filter requirements under a multiple lead ALE program; and the size threshold of the small system compliance flexibility. Due to the large number of alternative options considered, this analysis uses the high scenario assumptions to illustrate how their monetized benefits and costs compare to those of the final LCRI. Also note that EPA has feasibility concerns with the implementation of some of the alternative options analyzed which raises the level of uncertainty associated with the estimated cost and benefit values for those alternatives. The agency has noted in the following subsections the alternative options impacted by feasibility concerns. Exhibit 16 provides a detailed summary of the final LCRI requirements and the alternative options considered.

EXHIBIT 16—SUMMARY OF ALTERNATIVE OPTIONS CONSIDERED FOR THE FINAL LCRI

Area	Alternative option considered	Final LCRI
Lead Action Level	1. Lead Action Level of ≤0.015 mg/L 2. Lead Action Level of ≤0.005 mg/L	Lead AL of ≤0.010 mg/L (proposed rule).
Service Line Replacement Rate.	Service lines are replaced at an annual rate of 7%	Service lines are replaced at an annual rate of 10% (proposed rule).
Definition of Lead Content to be Replaced.	Systems must replace lead service lines and galvanized lines previously downstream of lead lines or unknown lead content lines, and lead connectors and galvanized lines previously downstream of lead connectors.	Systems must replace lead service lines and galvanized lines previously downstream of lead lines or unknown lead content lines. Lead connectors are replaced when encountered (proposed rule).
SLR Deferred Deadline	1. Systems may be given a deferred deadline for finishing all LSL and GRR replacements resulting in a maximum rate which is the lower of 10,000 lines per year or 39 replacements per 1,000 connections per year (proposed rule—with change to connections per year from households per year). 2. Systems may be given a deferred deadline for finishing all LSL and GRR replacements resulting in a maximum rate which is the lower of 8,000 lines per year or 39 replacements per 1,000 connections per year.	Systems may be given a deferred deadline for finishing all lead and GRR service line replacements resulting in a maximum rate of 39 replacements per 1,000 connections.

[37] Because these costs are not incurred by the public water system, these costs are not ''likely to occur solely as a result of compliance'' with the final LCRI, and, therefore, are not costs considered as part of the HRRCA under SDWA, section 1412(b)(3)(C)(i)(III).

[38] The EPA included the monetized estimated cost of WWTP phosphorus removal in it estimated total cost values in the final LCRI economic analysis in order to conservatively demonstrate the potential impact to PWSs given the fact that many systems operate both the drinking water and wastewater systems, however these costs are not part of the HRRCA under SDWA.

EXHIBIT 16—SUMMARY OF ALTERNATIVE OPTIONS CONSIDERED FOR THE FINAL LCRI—Continued

Area	Alternative option considered	Final LCRI
Lead Tap Sampling	All systems return to standard 6-month monitoring with an ALE. Systems with lead, GRR, and/or unknown service lines at the compliance date conduct standard 6-month monitoring at the compliance date and non-lead service line systems remain on LCR monitoring schedule until new LCRI protocol sampling may change P90. When (and if) a non-lead system finds a lead or GRR service line they return to 6-month monitoring. (proposed rule). Systems that sampled using the new protocol and are below the LCRI action level prior to the compliance date may qualify to retain their current schedule.	All systems return to standard 6-month monitoring with an ALE. Systems with lead and GRR service lines return to standard 6-month monitoring at compliance date. Unknown and non-lead service line systems remain on LCR monitoring schedule until new LCRI protocol sampling may change P90. When (and if) a non-lead/all unknown system finds a lead or GRR service line they return to 6-month monitoring. Systems with lead and GRR service lines that sampled using the new protocol and are below the LCRI action level prior to the compliance date may qualify to retain their current schedule.
Multiple ALE Filter Programs	Systems with at least 2 lead ALEs in a rolling 5-year period must prepare and submit a filter plan to State. Systems with at least 3 lead ALEs in a rolling 5-year period must: 1. Make filters available to all customers with lead, GRR, and unknown lead content service lines. 2. Deliver filters directly to all customers.	Systems with at least 2 lead ALEs in a rolling 5-year period must prepare and submit a filter plan to State. Systems with at least 3 lead ALEs in a rolling 5-year period must make filters available to all customers (proposed rule—with filter plan being required after 2 ALEs instead of 3 ALEs for the final rule).
Small System Flexibility	CWSs that serve 10,000 or fewer persons, and all NTNCWSs, are provided compliance flexibility when they exceed the action level.	CWSs that serve 3,300 or fewer persons, and all NTNCWSs, are provided compliance flexibility when they exceed the action level (proposed rule).

Acronyms: LCRI = Lead and Copper Rule Improvements; GRR = galvanized requiring replacement; ALE = action level exceedance; CWS = community water system; NTNCWS = non-transient, non-community water system; LSL = lead service line; GRR = galvanized requiring replacement service line; P90 = calculated 90th percentile lead tap sample.

Note: (Proposed Rule) indicates if a final rule component or alternative option were originally considered as part of the proposed LCRI.

1. Alternative Lead Action Levels

Exhibit 17 and Exhibit 18 compare the quantified costs and benefits of the final LCRI to the quantified costs and benefits at an action level of 0.015 mg/L holding all other final LCRI rule requirements constant. Results in these tables are provided for the high scenario at a two percent discount rate.[39]

EXHIBIT 17—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE LEAD ACTION LEVEL OPTION (AL >0.015 mg/L)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

PWS annual costs	Final rule			Alternative option (AL ≤0.015 mg/L)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$143.6	$176.2	$32.6	$143.6	$168.1	$24.5
PWS SLR	124.5	1,763.9	1,639.4	124.5	1,765.2	1,640.7
Corrosion Control Technology	647.8	692.9	45.1	647.8	621.1	−26.7
Point-of Use Installation and Maintenance	5.9	9.6	3.7	5.9	5.6	−0.3
Public Education and Outreach	72.1	302.2	230.1	72.1	274.7	202.6
Rule Implementation and Administration	0.2	3.4	3.2	0.2	3.4	3.2
Total Annual PWS Costs	*994.1*	*2,948.2*	*1,954.1*	*994.1*	*2,838.1*	*1,844.0*
Household SLR Costs	26.4	0.0	−26.4	26.4	0.0	−26.4
State Rule Implementation and Administration	41.8	67.6	25.8	41.8	66.2	24.4
Wastewater Treatment Plant Costs	4.8	5.1	0.3	4.8	3.3	−1.5

[39] Note the following for all cost results in this section VI.G Alternative Regulatory Options Considered: The EPA in the 2021 LCRR economic analysis (USEPA, 2020b) assumed that the cost of customer-side service line replacements made under the goal-based replacement requirement would be paid for by households. The agency also assumed that system-side service line replacements under the goal-based replacement requirement and full service line replacements (both customer-side and systems-side) would be paid by the PWS under the three percent mandatory replacement requirement. The EPA made these modeling assumptions based on the different levels of regulatory responsibility systems faced operating under a goal-based replacement requirement versus a mandatory replacement requirement. While systems would not be subject to a potential violation for not meeting the replacement target under the goal-based replacement requirement, the possibility of a violation under the three percent mandatory replacement requirement could motivate more systems to meet the replacement target even if they decided that it was necessary to adopt customer incentive programs that would shift the cost of replacing customer-side service lines from customers to the system. To be consistent with these 2021 LCRR modeling assumptions, under the final LCRI, the EPA assumed that mandatory replacement costs would fall only on systems. Therefore, the negative incremental values reported for the ''Household SLR Costs'' category do not represent a net cost savings to households. They represent an assumed shift of the estimated service line replacement costs from households to systems. The EPA has insufficient information to estimate the actual service line replacement cost sharing relationship between customers and systems at the national level of analysis.

EXHIBIT 17—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE LEAD ACTION LEVEL OPTION (AL >0.015 mg/L)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE—Continued

[Millions of 2022 USD]

PWS annual costs	Final rule			Alternative option (AL ≤0.015 mg/L)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Total Annual Rule Costs	1,067.1	3,020.9	1,953.8	1,067.1	2,907.6	1,840.5

Acronyms: AL = action level; LCRI = Lead and Copper Rule Improvements; PWS = public water system; SLR = lead service line replacement; USD = United States dollar.

Notes:

(1) Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables which vary between the low and high cost scenarios.

(2) Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

EXHIBIT 18—ESTIMATED NATIONAL ANNUAL BENEFIT COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE LEAD ACTION LEVEL OPTION (AL >0.015 mg/L)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

	Final rule			Alternative option (AL ≤0.015 mg/L)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Annual IQ Benefits	$3,279.0	$10,963.0	$7,684.0	$3,279.0	$10,586.0	$7,307.0
Annual Low-Birth Weight Benefits	1.8	5.7	3.9	1.8	5.5	3.7
Annual ADHD Benefits	179.9	599.5	419.6	179.9	580.4	400.5
Annual Adult CVD Premature Mortality Benefits	8,174.9	25,210.0	17,035.1	8,174.9	24,203.4	16,028.5
Total Annual Benefits	11,635.6	36,778.2	25,142.6	11,635.6	35,375.3	23,739.7

Acronyms: ADHD = attention-deficit/hyperactivity disorder; AL = action level; CVD = cardiovascular disease; IQ = intelligence quotient; LCRI = Lead and Copper Rule Improvements; USD = United States dollar.

Note: Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

Exhibit 19 and Exhibit 20 compare the quantified costs and benefits of the final LCRI to the quantified costs and benefits at an action level of 0.005 mg/L holding all other final LCRI rule requirements constant. Results in these tables are provided for the high scenario at a two percent discount rate. Note that the estimated results for the alternative option, which assumes water systems can achieve lead levels at or below a lead action level of ≤0.005 mg/L, must be viewed as having a higher degree of uncertainty. Although the EPA has adjusted action level exceedance data that allows for the calculation of the cost and benefits of this alternative, the agency has concerns about the feasibility of implementing this option. See section IV.F.4 of this preamble for a detailed discussion of the lead action level and its function to support the feasibility of the CCT treatment technique. Given the concerns over feasibility and therefore the uncertainty associated with the estimated costs and benefits of this alternative option, the EPA is discounting the fact that estimated net benefits for this alternative option are greater than the estimated net benefits for the final LCRI. The final LCRI maintains the lead action level at ≤0.010 mg/L.

EXHIBIT 19—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE LEAD ACTION LEVEL OPTION (AL >0.005 mg/L)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

PWS annual costs	Final rule			Alternative option (AL ≤0.005 mg/L)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$143.6	$176.2	$32.6	$143.6	$198.7	$55.1
PWS SLR	124.5	1,763.9	1,639.4	124.5	1,762.4	1,637.9
Corrosion Control Technology	647.8	692.9	45.1	647.8	819.4	171.6
Point-of Use Installation and Maintenance	5.9	9.6	3.7	5.9	15.7	9.8
Public Education and Outreach	72.1	302.2	230.1	72.1	374.2	302.1
Rule Implementation and Administration	0.2	3.4	3.2	0.2	3.6	3.4
Total Annual PWS Costs	*994.1*	*2,948.2*	*1,954.1*	*994.1*	*3,174.0*	*2,179.9*

EXHIBIT 19—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE LEAD ACTION LEVEL OPTION (AL >0.005 mg/L)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE—Continued

[Millions of 2022 USD]

PWS annual costs	Final rule			Alternative option (AL ≤0.005 mg/L)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Household SLR Costs	26.4	0.0	−26.4	26.4	0.0	−26.4
State Rule Implementation and Administration	41.8	67.6	25.8	41.8	71.7	29.9
Wastewater Treatment Plant Costs	4.8	5.1	0.3	4.8	8.2	3.4
Total Annual Rule Costs	1,067.1	3,020.9	1,953.8	1,067.1	3,253.9	2,186.8

Acronyms: AL = action level; LCRI = Lead and Copper Rule Improvements; PWS = public water system; SLR = lead service line replacement; USD = United States dollar.

Notes:

(1) Previous Baseline costs are projected over the 35-year period of analysis and are affected by EPA's assumptions on three uncertain variables which vary between the low and high cost scenarios.

(2) Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

EXHIBIT 20—ESTIMATED NATIONAL ANNUAL BENEFIT COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE LEAD ACTION LEVEL OPTION (AL >0.005 mg/L)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

	Final rule			Alternative option (AL ≤0.005 mg/L)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Annual IQ Benefits	$3,279.0	$10,963.0	$7,684.0	$3,279.0	$11,651.2	$8,372.2
Annual Low-Birth Weight Benefits	1.8	5.7	3.9	1.8	6.0	4.2
Annual ADHD Benefits	179.9	599.5	419.6	179.9	634.9	455.0
Annual Adult CVD Premature Mortality Benefits	8,174.9	25,210.0	17,035.1	8,174.9	27,044.4	18,869.5
Total Annual Benefits	11,635.6	36,778.2	25,142.6	11,635.6	39,336.5	27,700.9

Acronyms: ADHD = attention-deficit/hyperactivity disorder; AL = action level; CVD = cardiovascular disease; IQ = intelligence quotient; LCRI = Lead and Copper Rule Improvements; SLR = lead service line replacement; USD = United States dollar.

Note: Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

2. Alternative Service Line Replacement Rate

Exhibit 21 and Exhibit 22 compare the quantified costs and benefits of the final LCRI to the quantified costs and benefits of the rule with an alternative service line replacement rate of seven percent, holding all other rule requirements constant. Results are provided for the high scenario at a two percent discount rate.

EXHIBIT 21—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE SERVICE LINE REPLACEMENT OPTION (SLR RATE = 7%)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

PWS Annual Costs	Final rule			Alternative option (SLR Rate = 7%)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$143.6	$176.2	$32.6	$143.6	$176.1	$32.5
PWS SLR	124.5	1,763.9	1,639.4	124.5	1,672.2	1,547.7
Corrosion Control Technology	647.8	692.9	45.1	647.8	696.0	48.2
Point-of Use Installation and Maintenance	5.9	9.6	3.7	5.9	10.2	4.3
Public Education and Outreach	72.1	302.2	230.1	72.1	341.0	268.9
Rule Implementation and Administration	0.2	3.4	3.2	0.2	3.4	3.2
Total Annual PWS Costs	*994.1*	*2,948.2*	*1,954.1*	*994.1*	*2,898.9*	*1,904.8*
Household SLR Costs	26.4	0.0	−26.4	26.4	0.0	−26.4
State Rule Implementation and Administration	41.8	67.6	25.8	41.8	67.7	25.9

EXHIBIT 21—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE SERVICE LINE REPLACEMENT OPTION (SLR RATE = 7%)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE—Continued

[Millions of 2022 USD]

PWS Annual Costs	Final rule			Alternative option (SLR Rate = 7%)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Wastewater Treatment Plant Costs	4.8	5.1	0.3	4.8	5.2	0.4
Total Annual Rule Costs	1,067.1	3,020.9	1,953.8	1,067.1	2,971.8	1,904.7

Acronyms: LCRI = Lead and Copper Rule Improvements; PWS = public water system; SLR = lead service line replacement; USD = United States dollar.

Notes: (1) Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables which vary between the low- and high-cost scenarios.

(2) Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

EXHIBIT 22—ESTIMATED NATIONAL ANNUAL BENEFIT COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE SERVICE LINE REPLACEMENT OPTION (SLR RATE = 7%)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

	Final rule			Alternative option (SLR Rate = 7%)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Annual IQ Benefits	$3,279.0	$10,963.0	$7,684.0	$3,279.0	$9,994.8	$6,715.8
Annual Low-Birth Weight Benefits	1.8	5.7	3.9	1.8	5.2	3.4
Annual ADHD Benefits	179.9	599.5	419.6	179.9	540.5	360.6
Annual Adult CVD Premature Mortality Benefits	8,174.9	25,210.0	17,035.1	8,174.9	22,997.8	14,822.9
Total Annual Benefits	11,635.6	36,778.2	25,142.6	11,635.6	33,538.3	21,902.7

Acronyms: ADHD = attention-deficit/hyperactivity disorder; CVD = cardiovascular disease; IQ = intelligence quotient; LCRI = Lead and Copper Rule Improvements; SLR = lead service line replacement USD = United States dollar.

Note: Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

3. Alternative Definition of Lead Content Service Lines To Be Replaced

Exhibit 23 and Exhibit 24 compare the quantified costs and benefits of the final LCRI to the quantified costs and benefits of requiring all lead connectors and all galvanized lines downstream and previously downstream from lead connectors be replaced along with LSLs and galvanized service lines downstream of LSLs or unknown lead content service lines at the 10 percent annual replacement rate. Results are provided for the high scenario at the two percent discount rate. As discussed in sections IV.B.2 and IV.O.3 of this preamble, both the complete inventorying and mandatory removal of lead connectors and galvanized service lines downstream and previously downstream of lead connectors is not feasible without significantly delaying the replacement of lead and GRR service lines. Therefore, note that although the EPA was able to estimate costs and benefits for this alternative option, using 7th DWINSA survey data on lead content service lines, the estimated results are uncertain and likely overestimate both costs and benefits since full lead and GRR service line replacement is assumed to still occur within the required 10 year window (except for those systems on deferred deadlines) when in fact these replacement may be delayed as a result of implementing the requirements of this option. Given the concerns over feasibility and therefore the uncertainty associated with the estimated costs and benefits of this alternative option (note benefits estimates would be overestimated to a larger extent than costs), the EPA is discounting the fact that estimated net benefits for this alternative option are greater than the estimated net benefits for the final LCRI. The final LCRI maintains the final rules requirement to replace all LSLs and galvanized service lines downstream of LSLs or unknown lead content service lines at the 10 percents annual replacement rate (except for those systems on deferred deadlines).

EXHIBIT 23—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE OPTION INCLUDING LEAD CONNECTORS IN DEFINITION OF SERVICE LINES TO BE REPLACED—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

	Final rule			Alternative option (lead connectors and galvanized lines previously downstream of lead connectors must be replaced)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
PWS Annual Costs						
Sampling	$143.6	$176.2	$32.6	$143.6	$176.4	$32.8
PWS SLR	124.5	1,763.9	1,639.4	124.5	1,921.7	1,797.2
Corrosion Control Technology	647.8	692.9	45.1	647.8	701.3	53.5
Point-of Use Installation and Maintenance	5.9	9.6	3.7	5.9	9.7	3.8
Public Education and Outreach	72.1	302.2	230.1	72.1	306.6	234.5
Rule Implementation and Administration	0.2	3.4	3.2	0.2	3.4	3.2
Total Annual PWS Costs	*994.1*	*2,948.2*	*1,954.1*	*994.1*	*3,119.1*	*2,125.0*
Household SLR Costs	26.4	0.0	−26.4	26.4	0.0	−26.4
State Rule Implementation and Administration	41.8	67.6	25.8	41.8	67.9	26.1
Wastewater Treatment Plant Costs	4.8	5.1	0.3	4.8	5.3	0.5
Total Annual Rule Costs	1,067.1	3,020.9	1,953.8	1,067.1	3,192.3	2,125.2

Acronyms: LCRI = Lead and Copper Rule Improvements; SLR = lead service line replacement; PWS = public water system; USD = United States dollar.

Notes: (1) Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables which vary between the low and high cost scenarios.

(2) Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

EXHIBIT 24—ESTIMATED NATIONAL ANNUAL BENEFIT COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE OPTION INCLUDING LEAD CONNECTORS IN DEFINITION OF SERVICE LINES TO BE REPLACED—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

	Final rule			Alternative option (lead connectors and galvanized lines previously downstream of lead connectors must be replaced)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Annual IQ Benefits	$3,279.0	$10,963.0	$7,684.0	$3,279.0	$12,646.8	$9,367.8
Annual Low-Birth Weight Benefits	1.8	5.7	3.9	1.8	6.4	4.6
Annual ADHD Benefits	179.9	599.5	419.6	179.9	684.8	504.9
Annual Adult CVD Premature Mortality Benefits	8,174.9	25,210.0	17,035.1	8,174.9	28,943.5	20,768.6
Total Annual Benefits	11,635.6	36,778.2	25,142.6	11,635.6	42,281.5	30,645.9

Acronyms: ADHD = attention-deficit/hyperactivity disorder; CVD = cardiovascular disease; IQ = intelligence quotient; LCRI = Lead and Copper Rule Improvements; USD = United States dollar.

Note: Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

4. Alternative Service Line Replacement Deferred Deadline

Exhibit 25 and Exhibit 26 compare the quantified costs and benefits of the final LCRI to the quantified costs and benefits under an alternative service line replacement deferred deadline which would allow systems to replace lead and GRR service lines at a maximum rate equal to the lower of two alternatives: (1) 10,000 lines per year; or (2) 39 replacements per 1000 connections per year, holding all other rule requirements constant. Results are provided for the high scenario at a two percent discount rate.

EXHIBIT 25—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE DEFERRED DEADLINE OPTION (ADDING MAX RATE OF 10,000 SL PER YEAR)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[millions of 2022 USD]

PWS Annual Costs	Final rule			Alternative option (SL replacement deferred deadline with additional potential maximum rate of 10,000 SL per year)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$143.6	$176.2	$32.6	$143.6	$176.0	$32.4
PWS SLR	124.5	1,763.9	1,639.4	124.5	1,763.1	1,638.6
Corrosion Control Technology	647.8	692.9	45.1	647.8	692.8	45.0
Point-of Use Installation and Maintenance	5.9	9.6	3.7	5.9	9.7	3.8
Public Education and Outreach	72.1	302.2	230.1	72.1	302.4	230.3
Rule Implementation and Administration	0.2	3.4	3.2	0.2	3.4	3.2
Total Annual PWS Costs	*994.1*	*2,948.2*	*1,954.1*	*994.1*	*2,947.4*	*1,953.3*
Household SLR Costs	26.4	0.0	−26.4	26.4	0.0	−26.4
State Rule Implementation and Administration	41.8	67.6	25.8	41.8	67.6	25.8
Wastewater Treatment Plant Costs	4.8	5.1	0.3	4.8	5.0	0.2
Total Annual Rule Costs	1,067.1	3,020.9	1,953.8	1,067.1	3,020.0	1,952.9

Acronyms: LCRI = Lead and Copper Rule Improvements; PWS = public water system; SL = service line; SLR = lead service line replacement; USD = United Stated dollar.

Notes: (1) Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables which vary between the low and high cost scenarios.

(2) Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

EXHIBIT 26—ESTIMATED NATIONAL ANNUAL BENEFIT COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE DEFERRED DEADLINE OPTION (ADDING MAX RATE OF 10,000 SL PER YEAR)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

	Final rule			Alternative option (SL replacement deferred deadline with additional potential maximum rate of 10,000 SL per year)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Annual IQ Benefits	$3,279.0	$10,963.0	$7,684.0	$3,279.0	$10,960.3	$7,681.3
Annual Low-Birth Weight Benefits	1.8	5.7	3.9	1.8	5.7	3.9
Annual ADHD Benefits	179.9	599.5	419.6	179.9	599.3	419.4
Annual Adult CVD Premature Mortality Benefits	8,174.9	25,210.0	17,035.1	8,174.9	25,203.7	17,028.8
Total Annual Benefits	11,635.6	36,778.2	25,142.6	11,635.6	36,769.0	25,133.4

Acronyms: ADHD = attention-deficit/hyperactivity disorder; CVD = cardiovascular disease; IQ = intelligence quotient; LCRI = Lead and Copper Rule Improvements; SL = service line; USD = United States dollar.

Note: Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

Exhibit 27 and Exhibit 28 compare the quantified costs and benefits of the final LCRI to the quantified costs and benefits under an alternative service line replacement deferred deadline which would allow systems to replace lead and GRR service lines at a maximum rate equal to the lower of two alternatives: (1) 8,000 lines per year; or (2) 39 replacements per 1000 connections per year, holding all other rule requirements constant. Results are provided for the high scenario at a two percent discount rate.

EXHIBIT 27—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE DEFERRED DEADLINE OPTION (ADDING MAX RATE OF 8,000 SL PER YEAR)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

PWS Annual Costs	Final rule			Alternative option (SL replacement deferred deadline with additional potential maximum rate of 8,000 SL per year)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$143.6	$176.2	$32.6	$143.6	$176.0	$32.4
PWS SLR	124.5	1,763.9	1,639.4	124.5	1,761.8	1,637.3
Corrosion Control Technology	647.8	692.9	45.1	647.8	692.8	45.0
Point-of Use Installation and Maintenance	5.9	9.6	3.7	5.9	9.7	3.8
Public Education and Outreach	72.1	302.2	230.1	72.1	302.7	230.6
Rule Implementation and Administration	0.2	3.4	3.2	0.2	3.4	3.2
Total Annual PWS Costs	*994.1*	*2,948.2*	*1,954.1*	*994.1*	*2,946.4*	*1,952.3*
Household SLR Costs	26.4	0.0	−26.4	26.4	0.0	−26.4
State Rule Implementation and Administration	41.8	67.6	25.8	41.8	67.6	25.8
Wastewater Treatment Plant Costs	4.8	5.1	0.3	4.8	5.0	0.2
Total Annual Rule Costs	1,067.1	3,020.9	1,953.8	1,067.1	3,019.0	1,951.9

Acronyms: LCRI = Lead and Copper Rule Improvements; PWS = public water system; SL = service line; SLR = lead service line replacement; USD = United Stated dollar.

Notes: (1) Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables which vary between the low and high cost scenarios.

(2) Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

EXHIBIT 28—ESTIMATED NATIONAL ANNUAL BENEFIT COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE DEFERRED DEADLINE OPTION (ADDING MAX RATE OF 8,000 SL PER YEAR)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

	Final rule			Alternative option (SL replacement deferred deadline with additional potential maximum rate of 8,000 SL per year)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Annual IQ Benefits	$3,279.0	$10,963.0	$7,684.0	$3,279.0	$10,943.3	$7,664.3
Annual Low-Birth Weight Benefits	1.8	5.7	3.9	1.8	5.7	3.9
Annual ADHD Benefits	179.9	599.5	419.6	179.9	598.3	418.4
Annual Adult CVD Premature Mortality Benefits	8,174.9	25,210.0	17,035.1	8,174.9	25,164.0	16,989.1
Total Annual Benefits	11,635.6	36,778.2	25,142.6	11,635.6	36,711.3	25,075.7

Acronyms: ADHD = attention-deficit/hyperactivity disorder; CVD = cardiovascular disease; IQ = intelligence quotient; LCRI = Lead and Copper Rule Improvements; SL = service line; USD = United States dollar.

Note: Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

5. Alternative Lead Tap Sampling Standard Monitoring Requirements

Under the final LCRI, there are a number of criteria that can result in a system's starting standard six-month lead tap sample monitoring. Systems are required to conduct six-month lead tap sample monitoring if the system: exceeds an action level at the compliance date; has known lead and/or GRR service lines at the LCRI compliance date; or discovers any lead and/or GRR service lines after the compliance date (unless the system replaces all the discovered service lines prior to the next tap monitoring period), in addition to other criteria unchanged from the LCRR. Note that under the final LCRI requirements, non-lead and non-lead/unknown service line systems remain on their existing LCR monitoring schedule at the rule compliance date. They remain on their previous tap sampling schedule until new sampling, which is compliant with the LCRI sampling protocols, may change the system's calculated 90th percentile to exceed the action level. Also, systems with lead and GRR service lines that sampled using the new LCRI protocol (*i.e.,* correct priority tiering sites, correct sample volume, and either first-liter sample (at non-LSL service line sites) or first- and fifth-liter samples (at sites with LSLs)) and are below the LCRI action level prior to the compliance date may qualify to retain their current tap sampling schedule. As part of the development of the final rule, the EPA

considered an alternative option that would also require systems with unknown lead content service lines (even when no lead and/or GRR service lines are known to be present in the system) to conduct standard six-month monitoring.

The EPA's analysis of this alternative option found that the expected increase in sampling cost and potential increase in benefits associated with systems (non-lead/unknown and 100 percent unknown) taking earlier corrective action as a result of action level exceedances were small and did not affect estimated nation annualized costs and benefits at the EPA $100,000 significant digit level. Therefore, the EPA is not presenting exhibits characterizing the differences between the estimated costs and benefit of the final rule and the lead tap sampling alternative option. However, it is important to note that the EPA has feasibility concerns associated with the alternative option. The additional cost and burden to PWSs and States would draw resources away from the implementation of other LCRI rule components such as CCT and public education, and the implementation of tap sampling in higher risk locations. See section IV.E of this preamble for further discussion. Because of these concerns it is likely that the estimated cost and benefit of the alternative option are less certain than those of the final rule.

6. Alternative Temporary Filter Programs for Systems With Multiple Lead Action Level Exceedances

The final LCRI includes a requirement that systems with at least two lead ALEs in a rolling year-year period must prepare and submit a filter plan to the State. In addition, if a system has three or more ALEs in a rolling five-year period, it must make filters available to all consumers in the distribution system. The EPA assessed two additional alternative filter programs while developing the final rule. Under both alternatives, systems with at least two ALEs in a rolling five-year period will follow the final rule requirements to develop and submit to the State a filter plan. For systems with at least three ALEs in a rolling five-year window, alternative one would require systems to make temporary filters available to all customers having lead, GRR, and unknown lead content service lines. Alternative two would require systems to directly deliver temporary filters to all customers in the distribution system.

Exhibit 29 compares the quantified costs of the final LCRI to the quantified costs of requiring systems with at least three ALEs in a rolling five-year window to make filters available to customers with lead, GRR, or unknown lead content service lines. Under this alternative temporary filter option, all other final LCRI rule requirements have been held constant. Cost results are provided for the high scenario at the two percent discount rate.

EXHIBIT 29—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE TEMPORARY FILTERS PROGRAM FOR MULTIPLE ALE SYSTEMS OPTION (FILTERS MADE AVAILABLE TO LEAD, GRR, AND UNKNOWN SERVICE LINE CUSTOMERS ONLY)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

PWS Annual Costs	Final rule			Alternative option (temporary filters made available to lead, GRR, and unknown lead content service line customers only in systems meeting multiple ALE criteria)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$143.6	$176.2	$32.6	$143.6	$176.1	$32.5
PWS SLR	124.5	1,763.9	1,639.4	124.5	1,763.9	1,639.4
Corrosion Control Technology	647.8	692.9	45.1	647.8	692.9	45.1
Point-of Use Installation and Maintenance	5.9	9.6	3.7	5.9	9.6	3.7
Public Education and Outreach	72.1	302.2	230.1	72.1	274.8	202.7
Rule Implementation and Administration	0.2	3.4	3.2	0.2	3.4	3.2
Total Annual PWS Costs	*994.1*	*2,948.2*	*1,954.1*	*994.1*	*2,920.7*	*1,926.6*
Household SLR Costs	26.4	0.0	−26.4	26.4	0.0	−26.4
State Rule Implementation and Administration	41.8	67.6	25.8	41.8	67.6	25.8
Wastewater Treatment Plant Costs	4.8	5.1	0.3	4.8	5.1	0.3
Total Annual Rule Costs	1,067.1	3,020.9	1,953.8	1,067.1	2,993.4	1,926.3

Acronyms: ALE = action level exceedance; LCRI = Lead and Copper Rule Improvements; PWS = public water system; LSL = lead service line; GRR = galvanized requiring replacement service line; SLR = lead service line replacement; United States dollar.

Notes: (1) Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables which vary between the low and high cost scenarios.

(2) Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

Because the EPA's benefit analysis cannot quantify benefits from reducing lead exposures at residences that do not initially have lead or GRR service lines, the estimated benefits for this option are equal to those estimated for the final rule and therefore are not repeated. See Exhibit 14 for the estimated benefits of both the final LCRI and this alternative option. A discussion of the EPA's lead concentration data can be found in section VI.E.1 of this preamble. The quantified benefits of the final rule are in fact a more accurate representation of the alternative option where filters would not be made available to non-lead, GRR, and unknown service line customers. The analysis for the final LCRI was not able to quantify the potential benefits of filter use at non-lead and GRR households, resulting in

an underestimate of benefits. Therefore, although not shown in the estimated values, the benefits of the final LCRI are likely larger than those of the alternative option.

Exhibit 30 compares the quantified costs of the final LCRI to the quantified costs of requiring systems with at least three ALEs in a rolling five-year window to directly deliver filters to all customers in the distribution system. Results are provided for the high scenario at a two percent discount rate. Again, the EPA does not present benefit values for this option. The monetized benefits are equivalent to those of the final LCRI, see Exhibit 14. Given concerns over the potential to underestimate the cost impact of the final LCRI multiple ALE filter program, which is dependent on the number of customers in a system that chose to obtain a filter from the PWS, the EPA assumed a 100 percent customer filter pick-up rate. This assumption, made to ensure a conservative assessment of the cost impacts of the program could lead to a potential overestimate of the benefits of such a program. However, this potential to overestimate benefits is tempered by the fact that, as discussed above, the EPA can only calculate benefits accruing to households that initially have lead or GRR service lines. Therefore, although benefits accruing to this household group may be overestimated, the increased assumed pick-up rate among the non-lead and GRR service line households do not affect estimated benefits. So, given that both the final LCRI and the direct delivery of filters option assume 100 percent filter use rates in the estimation of benefits, the estimated benefits are equal and likely overestimated. It seems reasonable to postulate that the filter use rate may be higher for the direct delivery option, given the increased level of effort required of consumers to pick-up a filter from a PWS designated location under the LCRI (although the EPA has no documented information to indicated this is true) and therefore this option would result in greater benefits. Note, however, that the EPA has feasibility concerns, discussed in section IV.K.2 of this preamble, with the required direct delivery of temporary filters to all customers. Therefore, the alternative option costs and benefits are more uncertain and may be overestimated because the values assume timely implementation of the requirement.

Because the EPA is unable to quantify benefits from reducing lead exposures at residences that do not initially have lead or GRR service lines and given the concerns over the feasibility of requiring direct delivery of temporary filters to all customers, the EPA cannot wholly rely on estimates of net benefits to determine the optimal temporary filter program regulatory requirements when systems have multiple ALEs. Although the estimated net benefits for the ''only make filters available to customers with lead, GRR, or unknown lead content service lines'' are greater than those estimated for the final rule the EPA has determined that the additional non-quantifiable potential benefits associated with lead reductions at households that did not initially have lead or GRR service lines outweighs the additional cost of the final rule program. Also as stated above the EPA has feasibility concerns with the option requiring direct delivery to all customers. The final rule requires that, if a system has three or more ALEs in a rolling five-year period, it must make filters available to all consumers in the distribution system.

EXHIBIT 30—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE TEMPORARY FILTERS PROGRAM FOR MULTIPLE ALE SYSTEMS OPTION (DELIVER FILTERS TO ALL CUSTOMERS)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

PWS Annual Costs	Final rule			Alternative option (deliver temporary filters directly to all customers in systems meeting multiple ALE criteria)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$143.6	$176.2	$32.6	$143.6	$176.1	$32.5
PWS SLR	124.5	1,763.9	1,639.4	124.5	1,763.9	1,639.4
Corrosion Control Technology	647.8	692.9	45.1	647.8	692.9	45.1
Point-of Use Installation and Maintenance	5.9	9.6	3.7	5.9	9.6	3.7
Public Education and Outreach	72.1	302.2	230.1	72.1	308.1	236.0
Rule Implementation and Administration	0.2	3.4	3.2	0.2	3.4	3.2
Total Annual PWS Costs	*994.1*	*2,948.2*	*1,954.1*	*994.1*	*2,954.0*	*1,959.9*
Household SLR Costs	26.4	0.0	−26.4	26.4	0.0	−26.4
State Rule Implementation and Administration	41.8	67.6	25.8	41.8	67.6	25.8
Wastewater Treatment Plant Costs	4.8	5.1	0.3	4.8	5.1	0.3
Total Annual Rule Costs	1,067.1	3,020.9	1,953.8	1,067.1	3,026.7	1,959.6

Acronyms: ALE = action level exceedance; LCRI = Lead and Copper Rule Improvements; PWS = public water system; SL = service line; SLR = lead service line replacement; United States dollar.

Notes: (1) Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables which vary between the low and high cost scenarios.

(2) Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

7. Alternative Size Threshold for Small System Compliance Flexibility

Exhibit 31 and Exhibit 32 compare the quantified costs and benefits of the final LCRI to the quantified costs and benefits for an alternative option where the small system compliance flexibility size threshold for CWSs is equal to systems serving 10,000 or fewer persons. The final LCRI sets the small system compliance flexibility threshold at systems serving 3,300 or fewer persons. Note under both the final rule and the assessed alternative NTNCWSs are allowed compliance flexibility. Results are provided for the high scenario at a two percent discount rate. The estimated costs and benefits under the alternative small system compliance flexibility threshold, of systems serving up to 10,000 persons, assumes the effective implementation of POU in place of system wide CCT. As discussed in section IV.I of this preamble the agency finds that in CWSs serving greater than 3,300 persons it is highly unlikely that POU programs, given their complexity, will be implemented effectively and could not make a determination that a POU program is as effective as CCT at minimizing exposure to lead in water for systems serving more than 3,300 persons. Therefore, under the alternative threshold option the estimated costs and, to a larger degree, the estimated benefits are uncertain. Given the concerns over feasibility and therefore the uncertainty associated with the estimated costs and benefits of this alternative option, the EPA is discounting the fact that estimated net benefits for this alternative option are greater than the estimated net benefits for the final LCRI. The final rule sets the small system compliance flexibility threshold at systems serving 3,300 or fewer persons.

EXHIBIT 31—ESTIMATED NATIONAL ANNUALIZED RULE COST COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE SMALL SYSTEM FLEXIBILITY OPTION (FLEXIBILITY FOR CWSS SERVING UP TO 10,000 PERSONS)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

PWS Annual Costs	Final rule			Alternative option (small system flexibility for CWSs serving up to 10,000 persons)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Sampling	$143.6	$176.2	$32.6	$143.6	$176.0	$32.4
PWS SLR	124.5	1,763.9	1,639.4	124.5	1,763.9	1,639.4
Corrosion Control Technology	647.8	692.9	45.1	647.8	692.7	44.9
Point-of Use Installation and Maintenance	5.9	9.6	3.7	5.9	9.6	3.7
Public Education and Outreach	72.1	302.2	230.1	72.1	302.0	229.9
Rule Implementation and Administration	0.2	3.4	3.2	0.2	3.4	3.2
Total Annual PWS Costs	*994.1*	*2,948.2*	*1,954.1*	*994.1*	*2,947.6*	*1,953.5*
Household SLR Costs	26.4	0.0	−26.4	26.4	0.0	−26.4
State Rule Implementation and Administration	41.8	67.6	25.8	41.8	67.6	25.8
Wastewater Treatment Plant Costs	4.8	5.1	0.3	4.8	5.2	0.4
Total Annual Rule Costs	1,067.1	3,020.9	1,953.8	1,067.1	3,020.4	1,953.3

Acronyms: CWS = community water system; LCRI = Lead and Copper Rule Improvements; SLR = lead service line replacement; PWS = public water system; United States dollar.

Notes: (1) Previous Baseline costs are projected over the 35-year period of analysis and are affected by the EPA's assumptions on three uncertain variables which vary between the low and high cost scenarios.

(2) Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

EXHIBIT 32—ESTIMATED NATIONAL ANNUAL BENEFIT COMPARISON BETWEEN THE FINAL LCRI AND ALTERNATIVE SMALL SYSTEM FLEXIBILITY OPTION (FLEXIBILITY FOR CWSS SERVING UP TO 10,000 PERSONS)—HIGH SCENARIO—2 PERCENT DISCOUNT RATE

[Millions of 2022 USD]

	Final rule			Alternative option (small system flexibility for CWSs serving up to 10,000 persons)		
	Baseline	LCRI	Incremental	Baseline	LCRI	Incremental
Annual IQ Benefits	$3,279.0	$10,963.0	$7,684.0	$3,279.0	$10,963.1	$7,684.1
Annual Low-Birth Weight Benefits	1.8	5.7	3.9	1.8	5.7	3.9
Annual ADHD Benefits	179.9	599.5	419.6	179.9	599.5	419.6
Annual Adult CVD Premature Mortality Benefits	8,174.9	25,210.0	17,035.1	8,174.9	25,210.5	17,035.6
Total Annual Benefits	11,635.6	36,778.2	25,142.6	11,635.6	36,778.8	25,143.2

Acronyms: ADHD = attention-deficit/hyperactivity disorder; CVD = cardiovascular disease; CWS = community water system; IQ = intelligence quotient; LCRI = Lead and Copper Rule Improvements; USD = United States dollar.

Note: Very small differences in results between the final rule and the regulatory option are due to inter-run variability in the SafeWater LCR model, and/or rounding, and should not be interpreted at true differences between the costs and benefits of the final rule and the alternative option.

The EPA's analysis of the alternative regulatory options found that the following options had estimated annual net benefits greater than the final LCRI: (1) setting the action level to 0.005 mg/L; (2) including lead connectors and galvanized service lines previously downstream of lead connectors in the definition of lead content requiring replacement; (3) requiring systems with multiple action level exceedances to make temporary filters available to households with lead, GRR, or unknown lead content service lines; and (4) allowing systems serving up to 10,000 persons the ability to utilize the small system compliance flexibility options. From a purely economic standpoint that would mean these four options are preferable to the final LCRI. However, three of these options were not selected, in place of the final rule, because of questionable technical feasibility. SDWA section 1412(b)(4)(D) says the term ''feasible'' means feasible with the use of the best technology, treatment techniques and other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available. The EPA has discussed the agency's feasibility concerns with regard to: setting the action level to 0.005 mg/L; including lead connectors and galvanized service lines previously downstream of lead connectors in the definition of lead content requiring replacement; and allowing systems serving up to 10,000 persons the ability to utilize the small system compliance flexibility options, in preceding sections of this preamble. Regarding setting the action level at a level below 0.010 mg/L, the EPA has expressed concern associated with feasibility. See section IV.F.4 of this preamble for information on feasibility. When considering the inclusion of lead connectors and galvanized service lines previously downstream of lead connectors in the set of service lines that must be actively replaced, the EPA was concerned about how these activities might pull resources away from the removal of lead and GRR service lines that pose a greater exposure risk. See sections IV.B.2 and IV.O.3 of this preamble for a detailed discussion. In the case of setting the threshold for the small system flexibility option to include systems serving up to 10,000 persons or fewer, despite the modeling results showing an increase net benefits under this option, the EPA finds that the complexity of implementing point-of-use filtration at all residences in a system serving 3,300 to 10,000 individuals, or potentially 1,300 to 4,000 separate locations, cannot be correctly captured in the estimated cost structure within the economic model and makes this option infeasible. See section IV.I of this preamble for additional information on point-of-use feasibility. In addition, the monetized benefits associated with the implementation of CCT are known to be underestimated given the potential reductions in lead exposure at homes without lead and GRR service lines in a system implementing CCT which is not captured in the EPA benefit estimates. The CCT benefits also do not capture reduced water loss, plumbing repair cost, and water damage costs associated with the increased use of corrosion control. See section VI.F.2. of this preamble for more information on the unquantified impacts. See section IV.F of this preamble for additional information on corrosion control treatment. With regard to estimated annual net benefits being greater for the alternative option where systems with multiple action level exceedances would be required to only make temporary filters available to households with lead, GRR, or unknown lead content service lines, the EPA has highlighted the inability of the benefits analysis to monetize positive health impact from reduced lead exposure at non-lead and GRR service line locations which leads to an underestimate of final LCRI benefits relative to the benefits estimated for this alternative option. Note also that the EPA made a conservative costing assumption that 100 percent of households that are eligible to receive a filter would pick-up a filter when made available. The EPA has very little information on what the actual pick-up rate may be but it is possible that the rate could be significantly less than 100 percent and therefore the costs for both the final LCRI and this alternative multiple ALE temporary filters program are overestimated, and given the fact that the final LCRI is making filters available to all households in a system its estimated costs are likely overestimated to a greater extent than the alternative option. Because of the similar annual estimated net benefits between the two alternatives, only $27.5 million in 2022 dollars, and the benefit and cost estimation uncertainties outlined above the EPA cannot rely on the relative size of the estimated net benefits in selecting between these options. Therefore, the EPA selected the final LCRI multiple ALE option because it protects individuals in systems with multiple ALEs that do not have lead, GRR, or unknown service lines, were as the alternative option while addressing most of the exposure issues in lead, GRR service line systems today does not cover systems with multiple ALEs and no lead, GRR, or unknown service lines. The alternative option will also effectively sunset as all unknowns are identified and lead and GRR service lines are replaced (13 years except for systems on approved differed deadlines) leaving consumers in systems with chronic ALEs and no lead or GRR service lines to be exposed to potentially high levels of lead coming from premise plumbing. The final rule addresses this issue into the future by requiring filters be made available to all customers in systems with multiple ALEs.

In the case of the alternative lead tap sample monitoring requirements that would have systems with unknown lead content service lines start standard six-month lead tap sampling at the LCRI compliance date, the EPA's monetized cost and benefit estimates were too close to conclusively determine if this alternative option or the final LCRI has greater net benefits. Due to the potentially high volume of systems required to start standard monitoring, the EPA did not select to move forward with this alternative lead tap sampling option. One concern is the ability of the States to handle the increased demands of overseeing the potentially large number of systems requiring sampling assistance during the compressed time period immediately following the rule compliance date. Another concern is that requiring systems with unknowns to start standard six-month lead tap sampling would affect a large number of small systems, as the EPA estimates that 45 percent of small systems, or 20,200 systems, have an inventory with unknown material service lines and no lead or GRR service lines. Lastly, the EPA considered a phased approach to include systems with unknowns in the standard monitoring requirements but decided that the complexity of a phased approach was not commensurate with the benefits, as nearly all systems will conduct monitoring within three years of the rule promulgation based on their LCR sampling schedule. See section

IV.E of this preamble for additional information on lead tap sampling.

VII. Statutory and Executive Order Reviews

Additional information about these statutes and Executive orders can be found at *https://www.epa.gov/laws-regulations/laws-and-executive-orders.*

A. Executive Order 12866 (Regulatory Planning and Review) and Executive Order 14094 (Modernizing Regulatory Review)

This action is a ''significant regulatory action'', as defined under section 3(f)(1) of Executive Order 12866, as amended by Executive Order 14094. Accordingly, the United States Environmental Protection Agency (EPA) submitted this action to the Office of Management and Budget (OMB) for Executive Order 12866 review. Documentation of any changes made in response to the Executive Order 12866 review is available in the docket. The EPA prepared an analysis of the potential costs and benefits associated with this action. This analysis, the *Economic Analysis for the Final Lead and Copper Rule Improvements* or final LCRI Economic Analysis (USEPA, 2024a), is also available in the docket and is summarized in section VI of this preamble.

B. Paperwork Reduction Act (PRA)

The information collection activities in this final rule have been submitted for approval to the OMB under the PRA. The Information Collection Request (ICR) document that the EPA prepared has been assigned the EPA ICR number 2788.02 and OMB control number 2040–NEW. You can find a copy of the ICR in the docket for this rule, and it is briefly summarized here. The information collection requirements are not enforceable until OMB approves them.

The paperwork burden associated with this final rule consists of the burden imposed on systems to read and understand the LCRI as well as the burden associated with certain new or revised collections of information. Specifically, public water systems (PWSs) will have to assign personnel and devote resources to implement the rule. In addition, public water systems will need to attend training sessions and receive technical assistance from their State during implementation of the LCRI. Furthermore, PWSs will have to update the 2021 LCRR initial inventory and include information on lead connectors and submit the updated inventory to the State. For the PWSs that have lead, GRR, or unknown service lines, a service line replacement plan will need to be developed. PWSs will need to develop, submit to the State, and annually distribute public education materials on service line material type to those consumers served by lead, GRR, or unknown service lines. Systems must also update and submit to the State a tap site sample plan.

Likewise, the paperwork burden for States include reading and understanding the LCRI. The State will have to adopt the rule and develop programs to implement the LCRI. This may result in the State modifying their data system while implementing the LCRI. Also, the State will have to provide staff with training and technical assistance as well as provide water systems with training and technical assistance for implementation of the LCRI. The State is also responsible for reviewing the updated LCRR initial inventories (referred to as the baseline inventory in the LCRI) which will contain lead connector information and PWS demonstrations and written statements of only non-lead service lines, non-lead connectors, or no connectors present from systems in lieu of a publicly accessible inventory as well as reviewing service line replacement plans. States will have to review service line replacement plans. States will have to review language for public education materials on service line material type. States must also review updated tap site sample plans.

The information collected under the ICR is critical to States and other authorized entities that have been granted primacy (*i.e.,* primary enforcement authority) for the LCRI. These authorized entities are responsible for overseeing the LCRI implementation by certain public water systems within their jurisdiction. States would utilize these data to determine compliance, designate additional treatment controls to be installed, and establish enforceable operating parameters. The collected information is also necessary for PWSs. PWSs would use these data to demonstrate compliance, assess treatment options, operate and maintain installed treatment equipment, and communicate water quality information to consumers served by the water system. States would also be required to report a subset of these data to the EPA. The EPA would utilize the information to protect public health by ensuring compliance with the LCRI, measuring progress toward meeting the LCRI's goals, and evaluating the appropriateness of State implementation activities. No confidential information would be collected as a result of this ICR.

Respondents/affected entities: Respondents would include owners and operators of public water systems who must report to their State, and States, who must report to the Federal Government.

Respondent's obligation to respond: The collection requirements are mandatory under sections 1401(1)(D), 1445(a)(1)(A), and 1413(a)(3) of SDWA.

Estimated number of respondents: 67,003; includes 56 primacy agencies and 66,947 public water systems.

Frequency of response: For the first three years after the final rule is published, the majority of the responses are required once, with some outliers being required annually.

Total estimated burden: 3,987,886 hours (per year). Burden is defined at 5 CFR 1320.3(b).

Total estimated cost: $348,472,952 (per year), includes $166,786,198 in annualized capital or operation & maintenance costs.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for the EPA's regulations in 40 CFR are listed in 40 CFR part 9. When OMB approves this ICR, the agency will announce that approval in the **Federal Register** and publish a technical amendment to 40 CFR part 9 to display the OMB control number for the approved information collection activities contained in this final rule.

C. Regulatory Flexibility Act (RFA)

Pursuant to section 603 and 609(b) of the RFA, the EPA prepared an initial regulatory flexibility analysis (IRFA) for the proposed rule and convened a Small Business Advocacy Review (SBAR) Panel to obtain advice and recommendations from small entity representatives that potentially would be subject to the rule's requirements. Summaries of the IRFA and Panel recommendations are presented in the proposed rule at 88 FR 85040 (USEPA, 2023a).

As required by section 604 of the RFA, the EPA prepared a final regulatory flexibility analysis (FRFA) for this action. The FRFA addresses the issues raised by public comments on the IRFA for the proposed rule. The complete FRFA is available for review in section 7.4 of the final LCRI Economic Analysis in the docket and is summarized here.

For purposes of assessing the impacts of this final rule on small entities, the EPA considered small entities to be

water systems serving 10,000 persons or fewer. This is the threshold specified by Congress in the 1996 Amendments to the Safe Drinking Water Act (SDWA) for small water system flexibility provisions. As required by the RFA, the EPA proposed using this alternative definition in the **Federal Register** (63 FR 7620, USEPA, 1998c), requested public comment, consulted with the Small Business Administration (SBA), and finalized the alternative definition in the agency's Consumer Confidence Reports (CCR) regulation (63 FR 44524, USEPA, 1998d). As stated in the final CCR rule (USEPA, 1998d), the alternative definition would apply to all future drinking water regulations.

The EPA used the Federal Safe Drinking Water Information System (SDWIS/Federal) data from the fourth quarter 2020 to identify about 63,000 small public water systems (PWSs) that may be impacted by the final LCRI. A small PWS serves between 25 and 10,000 persons. These water systems include over 45,000 community water systems (CWSs) that serve year-round residents and more than 17,000 non-transient non-community (NTNCWSs) that serve the same persons at least six months per year (*e.g.,* a water system that is an office park or church). The EPA used data from the 7th Drinking Water Infrastructure Needs Survey and Assessment (DWINSA or Needs Survey) and its supplemental one-time update to estimate that, of the total number of small systems serving 10,000 persons or fewer, 22,235 CWSs and 434 NTNCWSs have service lines with lead content, potential lead content, or unknown content. For additional information on the development of estimated counts of systems with potential lead content service lines, see the final Economic Analysis document section 3.4.4 (USEPA, 2024a). The percent of small systems that are estimated to exceed the lead action level (0.010 mg/L) ranges from 4.4 to 38.9 percent depending on the variation between projected low- and high-cost scenarios of 90th percentile lead tap sample values and the presence of LSLs in systems (see Exhibits 7–3, 7–4, and 7–5 in the final Economic Analysis for more information; USEPA, 2024a).

SDWA is the core statute addressing drinking water quality at the Federal level. Under SDWA, the EPA sets public health goals and enforceable standards for drinking water quality. The EPA promulgated the LCR NPDWR to require PWSs to minimize lead and copper in drinking water by reducing water corrosivity and preventing lead and copper from leaching from premise plumbing and drinking water distribution system components.

The regulatory revisions in the LCRI will strengthen public health protection and improve rule implementation. The final rule includes requirements that can be categorized as follows: conducting a service line inventory that includes lead connectors and is updated annually; requiring mandatory full service line replacement under the control of water systems; improving tap sampling; installing or re-optimizing corrosion control treatment (CCT); enhancing lead tap and water quality parameter monitoring; evaluating sites with lead tap sample results above 0.010 mg/L to assess issues with CCT performance in the distribution system; utilizing pitcher filters and point-of-use devices; improving customer outreach; and revising reporting and recordkeeping requirements. The regulatory requirement categories can also be thought of as the main cost categories affecting small systems. States are required to implement operator certification (and recertification) programs per SDWA section 1419 to ensure operators of CWSs and NTNCWSs, including small water system operators, have the appropriate level of certification.

The EPA solicited small entity stakeholder input during the development of the LCRI. Sections VII.E and VII.F of this preamble contain detailed information on stakeholder outreach during the rulemaking process, including material on the federalism and Tribal consultation processes, respectively. The EPA also specifically sought input from small entity stakeholders through the SBAR Panel process. On November 15, 2022, the EPA's Small Business Advocacy Chairperson convened the Panel, which consisted of the Chairperson, the Director of the Standards and Risk Management Division within the EPA's Office of Ground Water and Drinking Water, the Administrator of the Office of Information and Regulatory Affairs within the OMB, and the Chief Counsel for Advocacy of the SBA. The SBAR Panel process was completed on May 31, 2023. Detailed information on the overall panel process can be found in the panel report available in the LCRI docket (EPA–HQ–OW–2022–0801).

The EPA received comments on the rule proposal, including from the Deputy Chief Counsel for the Office of Advocacy of the SBA, on the impact and cost burden for small water systems and their consumers. The SBA commented on Federal funding availability and access for small systems, upcoming and competing compliance needs (*e.g.,* per- and polyfluoroalkyl substances in drinking water and as a hazardous substance), the effect of potential increases to ratepayer costs for disadvantaged communities and the complexity of the updated tap sampling protocol for small systems with LSLs. The SBA recommended that the EPA revise its cost estimates for the LCRI to account for the stated concerns, revise the environmental justice analysis to include the impact of rate increases caused by the rule on disadvantaged communities, and work with small entities to ensure they have the personnel and resources necessary to achieve compliance with the LCRI requirements. The EPA discussed Federal funding and technical assistance avenues for systems, including small systems, in the preamble of the proposed LCRI (88 FR 84878, USEPA, 2023a) and in section III.G of this preamble. For additional discussion on the SBA's and others' comments on funding and technical assistance, see sections III.G and III.D of this preamble. For the EPA's response to the SBA's recommendations, see section VI of this preamble for the cost estimates and section VII.J of this preamble for more information on the environmental justice analysis.

The SBA commented on the feasibility of the proposed 10-year replacement deadline, noting that, ''under the RFA, the EPA is required to examine whether alternative timetables or requirements would be appropriate to help small systems comply with the LCRI'' and recommending that the agency revise and extend service line replacement deadlines for small systems. The SBA also commented on the ability of small systems to access private property for service line replacement. For the EPA's discussion on the feasibility of the mandatory service line replacement requirement, which is based on a sample of systems currently conducting replacement programs, see section IV.B of this preamble. The LCRI also includes the deferred deadlines provision, where any system with a high proportion of known lead and GRR service lines to service connections may defer their mandatory replacement deadline to a calculated later date (see section IV.B.8 of this preamble for more information). The EPA discussed customer access barriers and provided examples of successful systems in the preamble for the proposed LCRI. The final LCRI includes a requirement for systems to make a reasonable effort to obtain property owner consent.

Under the final rule requirements, small CWSs serving 3,300 or fewer

persons and all NTNCWSs with a 90th percentile lead value above the lead action level of 0.010 mg/L may choose an alternative compliance option to CCT, including installing and maintaining point-of-use devices or removing all lead-bearing plumbing material from the system. As discussed in section IV.F.1 of this preamble, the EPA previously determined that optimal corrosion control treatment (OCCT) is an affordable technology for all size systems (63 FR 42039, USEPA, 1998a; USEPA, 1998b). However, allowing the smallest systems (serving 3,300 or fewer persons) and all NTNCWSs to utilize these alternative compliance options provides these systems with flexibility in complying with the LCRI that may still have technical difficulties implementing CCT. These alternative compliance options are as effective at reducing risk from lead in drinking water for this category of systems as CCT. See section IV.I of this preamble for more information on these requirements.

In addition to the small system flexibility provisions for action level exceedances, there are other flexibilities included in the rule, such as in tap sampling, CCT, and public education, that will ensure sufficient public health protection for the communities served. For instance, systems serving 3,300 persons or fewer may apply to the State to reduce the frequency of tap sampling and monitoring to once every nine years if the system demonstrates that the distribution system and drinking water supply plumbing are free of lead- and copper-containing materials. The EPA clarified in the final LCRI that waivers approved by the State in writing prior to the LCRI effect date, rather than April 11, 2000, are still in effect unless the system no longer meets the 90th percentile of 0.005 mg/L for lead and 0.65 mg/L and the system does not meet the ineligibility criteria. In addition § 141.86(g)(7)(ii) was removed as it is no longer applicable. Systems serving 10,000 persons or fewer are only required to install or re-optimize corrosion control treatment if they exceed the action level, whereas most systems with CCT serving between 10,001 and 50,000 persons must now optimize their CCT similar to systems serving more than 50,000 persons as well as meet optimized water quality parameters. Systems serving 3,300 persons or fewer that exceed the lead action level do not have to submit a press release to media outlets as long as they meet the requirement to distribute public education materials to all households served. Also, systems serving 3,300 persons or fewer that exceed the lead action level must only complete one additional public outreach activity, whereas larger systems must complete three activities.

Another form of flexibility provided to all water systems, but that is most likely to benefit small systems, is the provision that systems with at least one lead or GRR service line and a lead action level exceedance (or lead practical quantitation limit (PQL) exceedance for large systems) may defer installing or re-optimizing OCCT as they replace all lead and GRR service lines in five years or less at a mandatory minimum annual rate. This provision allows systems to avoid the expense of having to conduct studies, such as a pipe loop study, prior to installing or re-optimizing OCCT while the system configurations are changing. In addition, this allows systems to prioritize the health protection afforded by mandatory full service line replacement. At the end of the five-year-or-less period, the system must remove all lead and GRR service lines (the system must have access to all lead and GRR service lines) and identify the material of all unknown service lines, replacing any lines found to be lead or GRR service lines. For systems with approximately 50 LSLs or fewer, most or all the lines can be replaced for the cost of the pipe rig/loop study, given the cost of a pipe loop study for small systems ($307,744) and assuming that the costs for a full service line replacement will range between $6,507 and $8,519, the estimated 25th and 75th percentile cost estimates derived by the EPA using 7th DWINSA data (USEPA, 2024a). If the system had an action level exceedance after completing mandatory service line replacement within five years or less, the system could evaluate corrosion control treatments with much less expensive coupon or desktop studies (chapter 4, section 4.3.3, USEPA 2024a). See section IV.F of this preamble for more information on this flexibility.

The EPA assessed the degree to which the final LCRI small system flexibilities would mitigate compliance costs. The EPA is estimating low- and high-cost scenarios to characterize uncertainty in the cost model results. These scenarios are functions of assigning different input values (low and high) to a number of variables that affect the relative cost of the small system compliance options. The number of systems serving 3,300 or fewer persons that choose to install and maintain point-of-use devices under the final LCRI range from 2,406 to 4,066, serving between 250,048 and 474,266 persons. The total monetized annualized cost for small systems under the low-and high-cost scenarios range from $277 to $313 million discounted at two percent. The low and high scenarios also produce between $1.4 and $2.5 billion in small system total monetized annualized benefits discounted at two percent. See chapter 7, section 7.4.5 of the final LCRI Economic Analysis for a breakdown of cost and benefit estimates by small system size sub-categories. Under the final LCRI, the number of small CWSs that will experience incremental annual costs of more than one percent of revenues ranges from 35,895 to 37,069 (80 percent to 82 percent of all small CWSs) and the number of small CWSs that will have annual incremental costs exceeding 3 percent of revenues ranges from 26,993 to 27,568 (60 percent to 61 percent of small CWSs). Lead-bearing plumbing was not analyzed in the EPA's cost-benefit model. See chapter 7, section 7.4 of the final LCRI Economic Analysis for more information on the characterization of the impacts under the final rule.

The EPA has considered an alternative approach to provide regulatory flexibility to small water systems. The alternative would make small system flexibility available to all NTNCWSs and CWSs serving up to 10,000 persons when a system has an action level exceedance. Systems that meet the criteria may choose from among the following compliance options: (1) optimizing existing CCT or installing new CCT; (2) installing and maintaining point-of-use devices at all locations being served; or (3) removal of all lead-bearing plumbing material from the system. Note that the EPA's cost-benefit model does not include an analysis of the removal of lead-bearing plumbing. The total monetized annualized cost for the high scenario under the alternative small system compliance option is $500,000 less than the final LCRI at a two percent discount rate. The alternative small system compliance option also results in increased monetized annualized benefits under the high scenario equal to $600,000 at a two percent discount rate. Note that the SafeWater Lead and Copper Rule (LCR) model cost minimization calculations producing these results do not capture the impact of the feasibility concerns associated with implementing point-of-use at systems serving over 3,300 persons. See Exhibits 31 and 32 in section VI.G.7 of this preamble for a more detailed comparison of the costs and benefits of the final LCRI and this alternative small system flexibility compliance requirement. Also see chapter 7, section

7.4 and chapter 8, section 8.8 of the final LCRI Economic Analysis for additional information on the analysis of the alternative approach (USEPA, 2024a).

In addition, the EPA will develop a Small Entity Compliance Guide to help small entities comply with this rule. The EPA plans to develop the Small System Compliance Guide within the first three years after promulgating the rule and make it available on the EPA's LCRI website.

D. The Unfunded Mandates Reform Act (UMRA)

This action contains a Federal mandate that may result in expenditures of $174 million in 2022$ ($100 million in 1995$ adjusted for inflation using the GDP implicit price deflator) or more as described in UMRA, 2 U.S.C. 1531–1538, for State, local, and Tribal governments, in the aggregate, or the private sector in any one year. Accordingly, the EPA prepared a written statement required under section 202 of UMRA. The statement is included in the docket for this action (see chapter 7, section 7.5 of the final LCRI Economic Analysis (USEPA, 2024a)) and is briefly summarized here.

The EPA conducted a cost analysis of the final rule as required under SDWA, UMRA, and Executive Order 12866. For additional detail on the analysis see section VI of this preamble and chapters 4 and 6 of the final LCRI Economic Analysis (USEPA, 2024a). The EPA finds that under the low-cost scenario, the highest annual incremental cost over the 35-year period of analysis is estimated to happen in the fourth year after rule promulgation. In this year, publicly owned PWSs are expected to have undiscounted incremental costs of $3.8 billion, privately owned PWSs are expected to have undiscounted incremental costs of $700 million, and States will have undiscounted incremental costs of $119 million. Under the high-cost scenario, the highest annual incremental cost over the 35-year period of analysis is estimated to happen in the eighth year after rule promulgation. In this year, publicly owned PWSs are expected to have undiscounted incremental costs of $5.9 billion, privately owned PWSs are expected to have undiscounted incremental costs of $875 million, and States will have undiscounted incremental costs of $40 million. Therefore, the final LCRI has projected estimated total undiscounted costs for the high cost year of the period of analysis that range from $4.6 billion to $6.8 billion in 2022 dollars and is therefore subject to the requirements of Sections 202 of UMRA. The EPA notes that the Federal Government is providing potential sources of funds to offset some of those direct compliance costs of the LCRI, including $15 billion as part of the Bipartisan Infrastructure Law. However, the rule's costs still exceed $174 million for a given year even when considering currently available Federal funds.

Consistent with the intergovernmental consultation provisions of UMRA section 204, the EPA consulted with governmental entities affected by this rule. The EPA describes the government-to-government dialogue and comments from State, local, and Tribal governments in sections VII.E and VII.F of this preamble.

Consistent with UMRA section 205, the EPA identified and analyzed a reasonable number of regulatory alternatives to determine the treatment technique requirements in the final LCRI. See section VI.G of this preamble and chapter 8 of the final LCRI Economic Analysis (USEPA, 2024a) for descriptions and analysis of alternative options that were considered.

This action may significantly or uniquely affect small governments. The EPA consulted with small governments concerning regulatory requirements that might significantly or uniquely affect them. The EPA describes this consultation in the Regulatory Flexibility Act (RFA), section VII.C of this document.

E. Executive Order 13132 (Federalism)

The EPA concluded that this action has federalism implications because it imposes substantial direct compliance costs on State or local governments, and the Federal Government will not provide the funds necessary to pay those costs. However, the EPA notes that the Federal Government is providing a potential source of funds to offset some of those direct compliance costs through the Bipartisan Infrastructure Law. The EPA estimates that the net change in primacy agency related costs for State, local, and Tribal governments in the aggregate is between $25.8 and $27.7 million in 2022 dollars at a two percent discount rate (USEPA, 2024a).

The EPA provides the following federalism summary impact statement. The EPA consulted with State and local officials early in the process of developing the proposed action to permit them to have meaningful and timely input into its development. On October 13, 2022, the EPA held a federalism consultation through a virtual meeting. The EPA invited the following national organizations representing State and local officials to that meeting: the National Governor's Association, the National Conference of State Legislatures, the Council of State Governments, the National League of Cities, the U.S. Conference of Mayors, the National Association of Counties, the International City/County Management Association, the National Association of Towns and Townships, the Council of State Governments, County Executives of America, and the Environmental Council of the States. The EPA also invited the Association of State Drinking Water Administrators, the Association of Metropolitan Water Agencies, the National Rural Water Association, the American Water Works Association, the Association of State and Territorial Health Officials, the National Association of County and City Health Officials, the American Public Works Association, the Association of Clean Water Administrators, the Western States Water Council, the African American Mayors Association, the National Association of State Attorneys General, the Western Governors' Association, the National School Board Association, the American Association of School Administrators, and the Council of the Great City Schools to participate in the meeting. Representatives from 15 organizations participated in the meeting.

The EPA also provided the members of the various associations an opportunity to provide input during follow-up meetings. The EPA received requests for additional meetings and held meetings with the Association of State Drinking Water Administrators and member States on October 5, 2022, and November 2, 2022.

In addition to input received during the meeting on October 13, 2022, the EPA provided an opportunity to receive written input within 60 days after the date of that meeting. A summary report of the views expressed during the federalism consultation meeting and written submissions is available in the docket (EPA–HQ–OW–2022–0813).

F. Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments)

This action has Tribal implications because it imposes substantial direct compliance costs on Tribal governments, and the Federal Government will not provide funds necessary to pay all of those direct compliance costs. There are 996 PWSs serving Tribal communities, where 87 of them are federally-owned (USEPA, 2024a). The final LCRI Economic Analysis estimated that the total annualized incremental costs placed on

all systems serving Tribal communities ranges from $5.9 to $7.2 million (USEPA, 2024a). The EPA notes that these estimated impacts will not fall evenly across all Tribal systems. The LCRI small system flexibility provisions offer regulatory relief by providing flexibilities for CWSs serving 3,300 or fewer persons and all NTNCWSs that choose alternatives to CCT, such as installation and maintenance of point-of-use devices and replacement of lead-bearing materials to address lead in drinking water. This flexibility may result in LCRI implementation cost savings for many Tribal systems since 89 percent of Tribal CWSs serve 3,300 or fewer persons and 16 percent of all Tribal systems are NTNCWSs (USEPA, 2024a). Lastly, the EPA notes that the Federal Government is providing a potential source of funds to offset some of those direct compliance costs through the Bipartisan Infrastructure Law (BIL). Tribal communities may apply for funding and technical assistance to support reduction of lead in drinking water through the Drinking Water Infrastructure Grants Tribal Set-Aside Program, specifically, the Lead Service Line Replacement Supplemental funding, which includes $60 million per year for five years (fiscal year (FY) 2022–FY 2026) from the Bipartisan Infrastructure Law to supports lead service line identification and replacement in water systems serving Tribes. The EPA also provides support to Tribal communities through Tribal Grant Programs established under the WIIN Act, specifically the Reducing Lead in Drinking Water Tribal Grant Program that supports lead reduction projects for public water systems that serve Tribal communities and the Voluntary School and Childcare Lead Testing and Reduction Tribal Grant Program to support lead testing in drinking water at any school or child care facility, public or private, that serves federally recognized Tribal populations.

The EPA consulted with federally recognized Tribal officials early in the process of developing this action to permit them to have meaningful and timely input into its development. Between October 6, 2022, and December 9, 2022, the EPA consulted with federally recognized Indian Tribes. The consultation included two national webinars with interested Tribes on October 27, 2022, and November 9, 2022, during which the EPA provided an overview of proposed rulemaking information and requested input. A total of 11 Tribal representatives participated in the two webinars. The EPA received oral comments from one commenter who supported the EPA's proposal to collect both first- and fifth-liter samples at lead service line sites and use the higher of the two in the lead 90th percentile calculation. The same commenter also asked if EPA has any programs that provide tap sampling assistance in Tribal homes. The EPA did not receive any written consultation comments from Tribal organizations during the comment period that followed the webinars. Over the course of the rulemaking, the agency did not receive any consultation requests from Tribal nations. Lastly, the EPA did not receive any written or oral comments from Tribal representatives on the proposed rule. A summary report of the views expressed during Tribal consultations is available in the docket (EPA–HQ–OW–2022–0801).

The EPA has met the needs of Tribes that were made known during the development of the LCRI. Specifically, for in-home sampling of lead and copper, the EPA intends to develop guidance documents to assist water systems in implementing the LCRI requirements, including tap sampling. Further, water systems serving Tribes can apply for WIIN grants to support both compliance tap sampling and the requirement for systems to offer supplemental sampling by consumer request.

G. Executive Order 13045 (Protection of Children From Environmental Health and Safety Risks)

Executive Order 13045 directs Federal agencies to include an evaluation of the health and safety effects of the planned regulation on children in Federal health and safety standards and explain why the regulation is preferable to potentially effective and reasonably feasible alternatives. This action is subject to Executive Order 13045 because it is a significant regulatory action under section 3(f)(1) of Executive Order 12866. The EPA believes that the environmental health or safety risk addressed by this action has a disproportionate effect on children as developing fetuses, infants, and young children are most susceptible to the harmful health effects of lead (ATSDR, 2020). Accordingly, the EPA evaluated the environmental health or safety effects of lead found in drinking water on children and estimated the risk reduction and health endpoint impacts to children associated with treatment to reduce lead in drinking water including the adoption and optimization of CCT technologies and the replacement of LSLs and GRR service lines. The results of these evaluations are included in chapter 5, sections 5.6 and 5.8, and appendix D of the final LCRI Economic Analysis (USEPA, 2024a) and described in section VI of this preamble. Copies of the final LCRI Economic Analysis and supporting information are available in the docket (EPA–HQ–OW–2022–0801).

Furthermore, the EPA's *Policy on Children's Health* also applies to this action. Information on how the Policy was applied is available in section III.B of this preamble.

H. Executive Order 13211 (Actions That Significantly Affect Energy Supply, Distribution, or Use)

This action is not a ''significant energy action,'' because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The water systems affected by this action do not generally generate power. In addition, this action does not propose to regulate any aspect of energy distribution because the water systems that would be regulated by the LCRI already use electrical service providers. Finally, the EPA determined that the incremental energy used to implement CCT at drinking water systems and replace LSLs and GRR service lines in response to the regulatory requirements is minimal. As such, the EPA does not anticipate that this final rule would have a significant adverse effect on the supply, distribution, or use of energy.

I. National Technology Transfer and Advancement Act of 1995

This action involves technical standards. The requirements under the LCRI may involve existing voluntary consensus standards because the LCRI requires additional monitoring for lead and copper. The EPA's monitoring and sampling methodologies generally include voluntary consensus standards developed by agencies, such as the American National Standards Institute (ANSI) and other similar types of entities wherever the EPA deems these methodologies appropriate for compliance monitoring. The rule includes requirements to use filters that are certified by an ANSI-accredited certifier. Additional information is available in sections IV.B and IV.I of this preamble. The LCRI does not, however, change any methodological requirements for monitoring or sample analysis. Additional information is available in section IV.E of this preamble. The EPA notes that in some cases, the LCRI revises the required frequency and number of lead tap samples.

J. Executive Order 12898 (Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations) and Executive Order 14096 (Revitalizing Our Nation's Commitment to Environmental Justice for All)

The EPA believes that the human health or environmental conditions that exist prior to this action result in or have the potential to result in disproportionate and adverse human health or environmental effects on communities with environmental justice concerns. The EPA found in the literature review conducted as part of the environmental justice analysis for the LCRI that there are environmental justice concerns associated with lead exposure in the baseline. With respect to the EPA's case study analysis, the data indicate a range of environmental justice concerns associated with baseline LSL presence. The EPA anticipates the LCRI will not create disproportionate and adverse human health or environmental effects on communities with environmental justice concerns under Executive Order 14096 (88 FR 25251, April 21, 2023); see also Executive Order 12898 (59 FR 7629, February 16, 1994). The EPA believes that this action is likely to reduce existing disproportionate and adverse effects on communities with environmental justice concerns. The EPA expects that the LCRI will reduce differential impacts associated with lead exposure from drinking water compared to the baseline identified in the environmental justice analysis. The documentation for this finding, including additional details on the methodology, results, and conclusions, are included in the EPA's Environmental Justice Analysis for the Proposed Lead and Copper Rule Improvements Report and is available in the public docket for this action (EPA–HQ–OW–2022–0801).

Executive Order 12898 first established Federal executive policy on environmental justice. Executive Order 14096 supplemented Executive Order 12898, and among other things, directs Federal agencies, as appropriate and consistent with applicable law, to build upon and strengthen their commitment to deliver environmental justice to all communities across America through an approach that is informed by scientific research, high-quality data, and meaningful Federal engagement with communities with environmental justice concerns.

Consistent with the agency's ''Technical Guidance for Assessing Environmental Justice in Regulatory Analysis'' (USEPA, 2016c), the EPA conducted an environmental justice analysis for the LCRI to assess impacts anticipated to result from the proposed LCRI (USEPA, 2023a). The analysis builds on and advances the analysis conducted under the LCRR, which evaluated baseline exposure to lead in drinking water. The LCRI's environmental justice analysis evaluated potential environmental justice concerns associated with lead in drinking water in the baseline and the proposed LCRI, including consideration of whether potential environmental justice concerns would be created or mitigated by the proposed LCRI relative to the baseline. The EPA compiled recent peer-reviewed research on the relationship between lead exposure and socioeconomic status and found that Black, Indigenous, and People of Color (BIPOC) and/or low-income populations are at higher risk of lead exposure and associated health risks. The EPA's literature review identified some trends indicating disproportionate and adverse human health risk for exposure to lead in populations of color and low-income populations, and also that populations of children in households occupied by people of color and/or low-income households are disproportionately at risk of exposure to lead in drinking water because they are more likely to live in housing built when LSLs were more commonly used. The EPA also conducted an analysis of seven case study cities and found a range of outcomes with respect to the sociodemographic and housing unit variables in areas served by LSLs in the cities investigated. In addition to LSL presence, the EPA considered housing age and traffic proximity as indicators of other potential lead exposure pathways.

Updated inventories are similarly not widely available yet; however, some systems have published updated inventories online. In the environmental justice analysis for the LCRI, the EPA evaluated service line inventories from seven water systems to estimate baseline exposure to lead in drinking water using LSL presence as a proxy for lead exposure (USEPA, 2023e). The EPA found a range of outcomes with respect to the sociodemographic and housing unit variables in areas served by LSLs in the cities investigated. While the EPA found that block groups with LSLs often had higher percentages of low-income residents, renters, and People of Color (specifically, Black, Hispanic, or linguistically isolated individuals) compared to block groups without LSLs, there was little evidence that the number of LSLs per capita was positively correlated with block group demographic characteristics for these seven case studies. However, block groups with the highest number of LSLs per capita (top quartile) had a notably larger percentage of Black residents than the service area as a whole for six case studies. Two other measures (traffic density and pre-1960 housing) were included to capture the possibility of other sources of lead. The analysis results showed that pre-1960 housing is notably higher in block groups with LSLs compared to those without. The percent of housing built prior to 1960 was also positively correlated with the number of LSLs per capita for every case study and was also elevated in the top quartile compared to the service area as a whole. A separate EPA analysis also revealed that LSL prevalence in Cincinnati, OH, and Grand Rapids, MI, was a stronger predictor of the prevalence of elevated blood lead levels compared with the EPA's EJScreen 2017 Lead Paint EJ Index or the U.S. Department of Housing and Urban Development's Deteriorated Paint Index (Tornero-Velez et al., 2023).

Taken together, these findings support the concern that adverse health effects associated with lead exposure from LSLs may be inequitably distributed with respect to LSL presence. While the limited number of water systems included in the analysis do not permit conclusions to be made about environmental justice and LSL presence outside of the context of these individual systems, the analysis does point to several findings. The analysis demonstrated significant differences in socioeconomic and housing characteristics and the prevalence of LSLs across these systems. It also demonstrated the importance of considering the specific characteristics within the individual system context. Taken together, these findings support the concern that adverse health effects associated with lead exposure from LSLs may be inequitably distributed with respect to LSL presence in some systems.

Statistical analysis did not identify strong associations between LSLR and the characteristics of the Census block group in which they occurred (*e.g.,* socioeconomic and housing characteristics) in any of the case studies. This is because, in general, at the time of the analysis either no LSLs or relatively few LSLs have been removed in the locations of the case studies, which affects the EPA's ability to quantify a relationship. Conversely, in the case study of the water system in Newark, New Jersey, almost all LSLs were removed in a short period of time,

similarly obscuring the relationship between removals and the socioeconomic and housing unit variables. Nevertheless, the EPA recognizes the potential that even in a water system where there are no environmental justice concerns with respect to LSL presence, the sequence and timing in which lead and GRR service lines are replaced by a system's service line replacement program can potentially create a concern. For example, research on a voluntary LSLR program in Trenton, New Jersey, found that owner-occupied and higher valued properties were more likely to participate in the program (Klemick et al., 2024). Many LCRI provisions will have the effect of preventing or minimizing environmental justice concerns from being created within the replacement program, as well as other requirements that can make full replacements and information more accessible to all customers (section III.H). The EPA expects that LCRI provisions, such as service line replacement prioritization, would reduce baseline differential impacts associated with lead exposure from drinking water. In sections III.G and III.H of this preamble, the EPA also highlights external funding available to support full service line replacement, as well as water systems' obligations under Federal civil rights laws.

Additionally, on October 25, 2022, and November 1, 2022, the EPA held public meetings related to environmental justice and the development of the proposed LCRI. The meetings provided an opportunity for the EPA to share information and for individuals to offer input on environmental justice considerations related to the development of the proposed LCRI and how to more equitably address lead in drinking water issues in their communities.

During the meetings and in subsequent written comments, the EPA received public comment on topics including disproportionate exposure to lead and its health effects among BIPOC and low-income communities; lead service line replacement (LSLR) funding; methods to prioritize LSLR; access to LSLR for renters; filter distribution and use during LSLR; lowering the lead action level; establishing an maximum contaminant level (MCL) for lead; updating the lead health effects language required for public education, public notification, and the CCR; ensuring that public education and public notification reaches communities that are most at risk; first- and fifth-liter lead tap sampling; remediating lead identified through sampling in schools and child care facilities; environmental justice concerns with corrosion control studies; community engagement; and regulatory enforcement and oversight. For more information on the public meetings, please refer to the *Public Meeting on Environmental Justice Considerations for the Development of the Proposed Lead and Copper Rule Improvements (LCRI) Meeting Summary* for each of the meeting dates in the public docket at *https://www.regulations.gov/docket/EPA-HQ-OW-2022-0801.* Written public comments can also be found in the docket.

1. Summary of Public Comments and the EPA's Response

The EPA received several comments regarding the agency's LCRI environmental justice analysis, in addition to general comments about environmental justice and equity in response to lead contamination of drinking water broadly. Commenters stated that low-income and BIPOC communities are disproportionately impacted by lead exposure from LSLs. Furthermore, commenters expressed that LCRI is a meaningful step forward to help many communities experiencing inequities due to several different and cumulative factors, including a lack of resources and investment. Commenters further suggested that analyzing disparities and inequities of environmental exposures is necessary to address environmental justice concerns. The EPA agrees that identifying and addressing disproportionate and adverse human health or environmental effects, as appropriate and consistent with applicable law, is essential for environmental justice considerations.

Some commenters alleged perceived deficiencies in the environmental justice analysis for LCRI based on proposed rule requirements with potential impacts on communities with environmental justice concerns. Since those comments were more specifically about individual rule requirements compared to how the EPA implemented the directives in Executive Orders 12898 and 14096, as allowed under SDWA, the EPA has responded to those comments in the relevant sections of the preamble and Response to Comments document (see section III.H of this preamble and section 22.10.1 of the Response to Comments document (USEPA, 2024k).

The EPA received comments concerning environmental justice and equity with respect to service line replacement and service line replacement plans. The agency's responses to comments are addressed in those sections and the LCRI Response to Comments (see sections IV.B and IV.C of this preamble and section 9 of the Response to Comments document (USEPA, 2024k)). Commenters recommended that the agency require systems to prioritize criteria for service line replacement in the final rule for communities with the greatest burden from lead exposure and that Federal funding should be allocated to communities with the highest concentration of LSLs. Commenters stated that the costs of service line replacement should not fall on the customers, especially given that, in their view, many communities with environmental justice concerns have not been prioritized in past public works investments. Commenters concluded that further disparities could be created if customers are required to pay to replace their portion of the LSL. While the EPA acknowledges the concern of the potential environmental justice impacts of paying for service line replacement, the agency has not used its section 1412 authority under SDWA to direct how a water system covers the costs of compliance with a NPDWR, which is, at its core, a matter of State and local law. There is no explicit statutory authority for EPA to do so; State and local governments regulate how water systems provide and charge for services to their customers. However, there is an unprecedented amount of Federal funds available to cover LSLR, such as from the BIL. BIL requires that States provide 49 percent of their LSLR and General Supplemental capitalization grant amounts as additional subsidization in the form of principal forgiveness and/or grants to disadvantaged communities, as defined under SDWA section 1452(d)(3). Additional Federal funding sources, such as the Housing and Urban Development Community Development Block Grants, U.S. Department of Agriculture Rural Development, and the U.S. Economic Development Administration Public Works program, also provide opportunities for equitable funding opportunities for communities to utilize for LSLR. Additional examples of funding customer-side service line replacement are given in section III.G of this preamble.

The final LCRI also includes requirements for systems regarding their service line replacement plans to advance transparency for communities, including communities with environmental justice concerns. Specifically, under LCRI at § 141.84(c)(2), systems must make their service line replacement plan publicly available. Systems are also required to

include a prioritization strategy and a funding strategy for conducting full service line replacement as part of their plans.

The EPA received one comment that stated the agency failed to consider the implications of the proposed rule on the affordability of water services and the associated water rate impacts on BIPOC households. The commenter stated that on top of the differential effects of specific rule provisions within the LCRI, the EPA must consider impacts of household water rate increases in disadvantaged households, opportunity costs of BIPOC households, and negative secondary effects the LCRI requirements will have on households. The EPA points out that ratemaking is generally governed by State and local authorities and the EPA does not have the authority to control those rates. The environmental justice analysis was conducted consistent with SDWA.

K. Consultations With the Science Advisory Board (SAB) and the National Drinking Water Advisory Council

In accordance with SDWA sections 1412(d) and 1412(e), the EPA consulted with the National Drinking Water Advisory Council (NDWAC) (or the Council) and the EPA Science Advisory Board (SAB). The following summarizes these requirements and consultations.

1. SAB

SDWA section 1412(e) requires that the EPA request comments from the SAB prior to the proposal of any NPDWR. As required by SDWA section 1412(e), in 2022, the EPA initiated consultation with the SAB to seek comments in advance of the publication of the proposed LCRI. During this consultation, the EPA asked the SAB to consider service line inventory data at select case study locations to advise the EPA about the most appropriate tools, indicators, and measures for evaluating environmental justice with respect to the presence and replacement of LSLs. The EPA also asked the SAB to evaluate the potential environmental justice impacts of the proposed LCRI in accordance with Executive Order 12898, which directs agencies to ''identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations'' (E.O. 12898, 1994).

On November 3, 2022, the EPA held a consultation with the SAB regarding the agency's draft case studies for the proposed LCRI environmental justice analysis. SAB members were asked to address the following questions:

(1.a.) Please comment on the tools/indicators/metrics, such as the recently released Environmental Justice Index (EJI) and Climate and Economic Justice Screening Tool (CEJST), that EPA should consider using when developing LSLR case studies to support the development of the Lead and Copper Rule Improvements EJ analysis.

(1.b.) Given the identified tools and indices (*i.e.,* EJScreen, Social Vulnerability Index, Area Deprivation Index) please comment on whether there is a sub-set of variables within the indices which should be given higher weights in the Lead and Copper Rule Improvements EJ assessment.

(2) Please comment on the indicator/measure that is most suitable for studying the EJ impacts associated with lead service lines and their replacement.

(3) Please comment on whether any of the tools or indicators under consideration for use in the Lead and Copper Rule Improvements assessment of the drinking water EJ impacts can help to better assess lead impacts from other co-located exposure pathways (*e.g.,* lead paint, soil, and dust) to inform the EPA's understanding of lead exposures from non-drinking water sources.

Materials shared with the SAB are available in the docket (EPA–HQ–OW–2022–0801).

In response, the EPA received a range of recommendations from SAB members. The recommendations primarily focused on the tools and indicators the EPA should use in its environmental justice analysis to support the LCRI. SAB members recommended using indicators from multiple tools (*e.g.,* EJScreen, Centers for Disease Control and Prevention (CDC)'s EJI, CDC/Agency for Toxic Substances and Disease Registry (ATSDR) Social Vulnerability Index (SVI), Area Deprivation Index (ADI)) to more effectively identify communities that are disproportionately burdened by lead exposure and evaluate environmental justice impacts of LSLs and LSLR. One member suggested not using tools that use an index that is based on different indicators or composite tools (evaluating multiple indicators together) (*e.g.,* EJScreen, CDC's EJI, CDC/ATSDR SVI, ADI). Instead, some members advised extracting and evaluating demographic and socioeconomic factors from these tools individually. SAB members recommended using individual socioeconomic variables from the 2020 U.S. Census in conjunction with the American Community Survey (ACS), CDC's Minority Health Social Vulnerability Index (MH SVI), and the University of South Carolina's Social Vulnerability Index (SoVI). One member recommended relying more heavily on tools that have finer resolution and use geographic units at the Census block group level, such as EJScreen and ADI. In addition, SAB members recommended indicators for studying LSL and LSLR environmental justice impacts including minority populations, low-income population, population under age five, pre-1960 housing, pre-1980 housing, people with disabilities, single-parent households, occupied housing units without complete plumbing, proximity to lead mines, hazardous waste proximity, superfund proximity, and particulate matter (PM) 2.5. A few members recommended including indicators that address drinking water or infrastructure vulnerabilities.

Some members suggested that the EPA focus on indicators most relevant to children, such as children under age five, maternal education, birth weight, and quality of home environment, because children are most sensitive to the effects of lead. One member suggested including a subset of indicators that are children-specific and comprise relevant subgroups of persons under five years and/or 18 years, such as children belonging to non-white racial/ethnic groups, children not born in the U.S., children with disabilities, and children at or below the poverty level. Some members pointed out that race/ethnicity indicators should be disaggregated to focus on only one race/ethnicity instead of an aggregate ''people of color'' indicator.

Some members suggested giving higher weights to indicators that address populations disproportionately vulnerable to lead exposure and its adverse health effects, such as population under 5 years old and low-income communities, because they are more likely to consume tap water. Additional indicators suggested for weighting were location based, including residential areas near legacy pollution sites.

Some SAB members suggested individual indicators from the following tools be used to consider lead from other pathways: EJScreen, SVI, ADI, and EJI. Some SAB members recommended using proximity to traffic and pre-1960s housing, as these could indicate compound lead exposure from pathways other than drinking water. For example, proximity to traffic could correspond to elevated lead in soil due to past emissions of leaded gasoline, while pre-1960s housing is more likely to have lead paint, contributing to lead in dust and soil.

As a result of the consultation, the EPA incorporated the suggestions from the SAB in a study of the environmental justice implications of the LCRI (USEPA, 2023e). The EPA evaluated correlations between per capita LSLs (in

a Census block group) and different ethnic groups including American Indian or Alaska Native, Asian or Pacific Islander, other or two races, Hispanic, Non-Hispanic Black, and Non-Hispanic white. The EPA also evaluated the relationship between the presence of LSL and indicators representing the populations most at risk of lead exposure such as low income and children under age five. Indicators addressing characteristics that are associated with exposure to other lead sources were also incorporated in the study including structures built prior to 1960 and proximity to traffic. Additional information on SAB recommendations is included in the SAB report available in the docket (EPA–HQ–OW–2022–0801).

2. NDWAC

SDWA section 1412(d) requires the EPA to consult with the NDWAC in proposing and promulgating any NPDWR. The EPA met this requirement for the proposed LCRI on November 30, 2022, when the EPA consulted with the NDWAC prior to the rule proposal. During the November 30 consultation meeting, the EPA provided background on lead in drinking water and the LCR, an overview of the LCRR published in January 2021, and a summary of the outcome of the EPA's review of the LCRR published in the December 2021 **Federal Register** notification (86 FR 71574). The EPA also discussed topics for the potential revisions in the proposed LCRI, including service line replacement, tap sampling and compliance, ways to reduce rule complexity, and small system flexibilities, to collect input and generate discussion among NDWAC members. A summary of the NDWAC consultation is available in the National Drinking Water Advisory Council, Fall 2022 Meeting Summary Report (NDWAC, 2022) and the docket for this rule (EPA–HQ–OW–2022–0801). The EPA carefully considered NDWAC recommendations during the development of the proposed LCRI.

On January 31, 2024, the EPA consulted with the NDWAC again. During the consultation the EPA provided general background on lead in drinking water and the LCR. The EPA provided an overview of the proposed LCRI including discussing the key revisions in the proposed rule. The EPA carefully considered the information provided by the NDWAC during the development of the final LCRI. A summary of the NDWAC input from that meeting is available in the NDWAC Summary Report (NDWAC, 2024) and is also available in the docket (EPA–HQ–OW–2022–0801).

L. Consultation With the Department of Health and Human Services Under SDWA Section 1412(d)

In accordance with section 1412(d) of SDWA, the agency consulted with the Department of Health and Human Services (HHS). On August 18, 2023, the EPA consulted with the HHS on the proposed LCRI and on July 15, 2024, the EPA consulted with the HHS on the final rule. The EPA received and considered comments from the HHS for both the proposal and final rule through the interagency review process under Executive Order 12866, described in section VII.A of this preamble. Summaries of the consultation meetings with the HHS can be found in the docket (EPA–HQ–OW–2022–0801).

M. Congressional Review Act (CRA)

This action is subject to the CRA, and the EPA will submit a rule report to each House of the Congress and to the Comptroller General of the United States. This action meets the criteria set forth in 5 U.S.C. 804(2).

VIII. Severability

The purpose of this section is to clarify the EPA's intent with respect to the severability of the components of the rule. The major components of the rule are: (1) a service line inventory, (2) service line replacement, (3) corrosion control treatment, (4) public education, including additional requirements for multiple lead action level exceedances, (5) sampling at schools and child care facilities, and (6) the small system compliance flexibility option.

If a court finds the EPA erred in its promulgation of some aspect of this rule, the EPA expects to request briefing on whether vacatur, partial vacatur, or remand would be the appropriate remedy. While parts of the rule are interdependent, other parts of the rule may be easily severed and implemented or vacated without disrupting the other parts of the rule. In addition, if one component of the rule is vacated, the remaining portions may or may not be adequate to meet the anti-backsliding standard for a revised NPDWR. For example, the LCRI's adjustments to the re-optimization requirements were made in part because systems will be conducting lead and GRR service line replacement. The EPA does not intend those adjustments to take effect in the absence of a mandatory service line replacement requirement. Conversely, if a court were to vacate or partially vacate some aspect of the corrosion control treatment requirements, such as the action level, the service line replacement requirements can be implemented, and the remaining components of the rule would meet the anti-backsliding standard in SDWA. Therefore, with the exceptions noted below, the EPA expects that additional briefing would be needed to address whether the provision at issue is integral to either the operation of the rule or the anti-backsliding requirement.

- The service line inventory requirement is severable from all other components of the rule, including the service line replacement requirements. While it supports the service line replacement requirements, and the public education requirement to notify customers that are served by lead, GRR, or unknown service lines work in tandem with the inventory, it is also critical to the EPA's administration of financial assistance programs authorized under SDWA for the replacement of service lines. Therefore, even if the service line replacement requirements or the public education requirements are vacated or partially vacated, the service line inventory requirements can operate independently and support the EPA's non-regulatory efforts to support the removal of lead service lines.
- If a court were to vacate any portion of the school and child care facility sampling requirements, the remainder of the rule could be implemented effectively. School and child care facility sampling is not integral to the other components of the rule or the EPA's evaluation of whether the rule as a whole meets the anti-backsliding provision of SDWA. Similarly, the school and child care facility sampling requirements can operate independently if other components of the rule are vacated.
- The small system compliance flexibility option, if vacated, is not integral to the rule or the underlying analyses of feasibility of the rule for small systems. As explained in section IV.I of this preamble, the EPA structured this provision so that it could be easily severed from the remainder of the rule because States are not required to adopt this provision to obtain primacy for the rule, and the EPA expects that some primacy States will exercise their discretion to not adopt this flexibility provision.
- The service line replacement requirements, together with the service line inventory, can be implemented if the court vacates any provisions for (1) corrosion control treatment, including the action level, (2) public education requirements, including additional requirements for multiple action level

exceedances, (3) school and child care facility sampling, and (4) the small system compliance flexibility option. By remaining in effect, the service line replacement provision will significantly reduce adverse health effects known to occur as a result of lead contamination from lead and galvanized service lines.

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List of Subjects

40 CFR Part 141

Environmental protection, Copper, Indians—lands, Intergovernmental relations, Lead, Lead service line, Reporting and recordkeeping requirements, Water supply.

40 CFR Part 142

Environmental protection, Administrative practice and procedure, Copper, Indians—lands, Intergovernmental relations, Lead, Lead service line, Reporting and recordkeeping requirements, Water supply.

Michael S. Regan,

Administrator.

For the reasons stated in the preamble, the Environmental Protection Agency amends 40 CFR parts 141 and 142 as follows:

PART 141—NATIONAL PRIMARY DRINKING WATER REGULATIONS

■ 1. The authority citation for part 141 continues to read as follows:

Authority: 42 U.S.C. 300f, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–4, 300j–9, and 300j–11.

■ 2. Amend § 141.2 by:
■ a. Revising the definitions of ''Action level'' and ''Child care facility'';
■ b. Adding in alphabetical order definitions for ''Connector'' and ''Distribution System and Site Assessment'';
■ c. Revising the definition of ''Elementary school'';
■ d. Removing the definitions of ''Find-and-fix'' and ''First draw sample'';
■ e. Adding in alphabetical order a definition for ''First-liter sample'';
■ f. Removing the definition of ''Full lead service line replacement'';
■ g. Adding in alphabetical order a definition for ''Galvanized requiring replacement service line'';
■ h. Revising the definition of ''Galvanized service line'';
■ i. Removing the definition of ''Gooseneck, pigtail, or connector'';
■ j. Revising the definitions of ''Lead service line'' and ''Lead status unknown service line'';
■ k. Removing the definitions of ''Lead trigger level'' and ''Medium-size water system'';
■ l. Adding in alphabetical order definitions for ''Medium water system'' and ''Newly regulated public water system'';
■ m. Removing the definitions of ''Optimal corrosion control treatment'' and ''Partial lead service line replacement'';
■ n. Adding in alphabetical order definitions for ''Optimal corrosion control treatment (OCCT)'' and ''Partial service line replacement'';
■ o. Revising the definitions of ''Pitcher filter'' and ''Secondary school'';
■ p. Adding in alphabetical order a definition for ''Service line'';
■ q. Revising the definitions of ''Small water system'' and ''System without corrosion control treatment'';
■ r. Adding in alphabetical order a definition for ''Tap monitoring period'';
■ s. Removing the definition of ''Tap sampling monitoring period''; and
■ t. Revising the definitions of ''Tap sampling period'', ''Tap sampling protocol'', and ''Wide-mouth bottles''.

The revisions and additions read as follows:

§ 141.2 Definitions.

* * * * *

Action level, for the purpose of subpart I of this part only, means the concentrations of lead or copper in water as specified in § 141.80(c) which determines requirements under subpart I of this part. The lead action level is 0.010 mg/L and the copper action level is 1.3 mg/L.

* * * * *

Child care facility, for the purpose of subpart I of this part only, means a location that houses a provider of child care, day care, or early learning services to children, as licensed by the State, local, or Tribal licensing agency.

* * * * *

Connector, also referred to as a gooseneck or pigtail, means a short segment of piping not exceeding three feet that can be bent and is used for connections between service piping, typically connecting the *service line* to the main. For purposes of subpart I of this part, lead connectors are not considered to be part of the service line.

* * * * *

Distribution System and Site Assessment means the requirements under subpart I of this part, pursuant to § 141.82(j), that water systems must perform at every tap sampling site that yields a lead result above the lead action level of 0.010 mg/L.

* * * * *

Elementary school, for the purpose of subpart I of this part only, means a *school* classified as elementary by State and local practice and composed of any span of grades (including pre-school) not above grade 8.

* * * * *

First-liter sample, for the purpose of subpart I of this part only, means a sample collected of the first one-liter volume of tap water drawn in accordance with § 141.86(b).

* * * * *

Galvanized requiring replacement service line, for the purpose of subpart I of this part only, means a *galvanized service line* that currently is or ever was downstream of a *lead service line;* or is currently downstream of a *lead status unknown service line.* For this definition, downstream means in the direction of flow through the service line. If the water system is unable to demonstrate that the *galvanized service line* was never downstream of a *lead service line,* it is a *galvanized requiring replacement service line* for purposes of the service line inventory and replacement requirements pursuant to § 141.84.

Galvanized service line, for the purpose of subpart I of this part only, means a *service line* that is made of iron or steel that has been dipped in zinc to prevent corrosion and rusting.

* * * * *

Lead service line, for the purpose of subpart I of this part only, means a *service line* that is made of lead or where a portion of the *service line* is made of lead. A lead-lined galvanized service line is defined as a *lead service line.*

Lead status unknown service line, for the purpose of subpart I of this part only, means a *service line* whose pipe material has not been demonstrated to be a *lead service line, galvanized requiring replacement service line,* or a non-lead service line pursuant to § 141.84(a)(3).

* * * * *

Medium water system, for the purpose of subpart I of this part only, means a water system that serves greater than 10,000 persons and less than or equal to 50,000 persons.

* * * * *

Newly regulated public water system, for the purpose of subpart I only, refers to either:

(1) An existing *public water system* that was not subject to National Primary Drinking Water Regulations in this part on October 16, 2024, because the system met the requirements of section 1411 of the Safe Drinking Water Act and § 141.3; or

(2) An existing water system that did not meet the definition of a *public water system* in § 141.2 on October 16, 2024. This term does not include existing water systems under new or restructured ownership or management.

* * * * *

Optimal corrosion control treatment (OCCT), for the purpose of subpart I of this part only, means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while ensuring that the treatment does not cause the water system to violate any National Primary Drinking Water Regulations in this part.

Partial service line replacement, for the purpose of subpart I of this part only, means replacement of any portion of a *lead service line* or *galvanized requiring replacement service line,* as defined in this section, that leaves in service any length of lead or galvanized requiring replacement service line upon completion of the work.

* * * * *

Pitcher filter means a non-plumbed water filtration device, which consists of a gravity fed water filtration cartridge and a filtered drinking water reservoir, that is certified by an American National Standards Institute accredited certifier to reduce lead in drinking water.

* * * * *

Secondary school, for the purpose of subpart I of this part only, means a school comprising any span of grades beginning with the next grade following an elementary school (usually 7, 8, or 9) and ending with grade 12. Secondary schools include both junior high schools and senior high schools and typically span grades 7 through 12.

* * * * *

Service line, for the purpose of subpart I of this part only, means a portion of pipe that connects the water main (or other conduit for distributing water to individual consumers or groups of consumers) to the building inlet. Where a building is not present, the service line connects the water main (or other conduit for distributing water to individual consumers or groups of consumers) to the outlet.

* * * * *

Small water system, for the purpose of subpart I of this part only, means a water system that serves 10,000 persons or fewer.

* * * * *

System without corrosion control treatment, for the purpose of subpart I of this part, means a water system that does not have or purchases all of its water from a system that does not have:

(1) An optimal corrosion control treatment approved by the State; or

(2) Any pH adjustment, alkalinity adjustment, and/or corrosion inhibitor addition resulting from other water quality adjustments as part of its treatment train infrastructure.

Tap monitoring period, for the purpose of subpart I of this part only, means the period of time during which each water system must conduct tap sampling for lead and copper analysis. The applicable tap monitoring period is determined by lead and copper concentrations in tap samples. The length of the tap monitoring period can range from six months to nine years.

Tap sampling period, for the purpose of subpart I of this part only, means the time period, within a tap monitoring period, during which the water system is required to collect samples for lead and copper analysis.

Tap sampling protocol means the method for collecting tap samples pursuant to § 141.86(b).

* * * * *

Wide-mouth bottles, for the purpose of subpart I of this part only, means bottles one liter in volume that have a mouth with an inner diameter that measures at least 40 millimeters wide.

■ 3. Amend § 141.31 by revising paragraph (d) to read as follows:

§ 141.31 Reporting requirements.

* * * * *

(d)(1) The public water system, within 10 days of completing the public notification requirements under subpart Q of this part for the initial public notice and any repeat notices, must submit to the primary agency a certification that it has fully complied with the public notification regulations under subpart Q. The public water system must include with this certification a representative copy of each type of notice distributed, published, posted, and made available to the persons served by the system and to the media.

(2) For Tier 1 notices for a lead action level exceedance, public water systems must provide a copy of the Tier 1 notice to the Administrator and the head of the primacy agency as soon as practicable, but not later than 24 hours after the public water system learns of the exceedance.

* * * * *

■ 4. Revise and republish § 141.80 to read as follows:

§ 141.80 General requirements and action level.

(a) *Applicability, effective date, and compliance deadlines.* The requirements of this subpart constitute the national primary drinking water regulations for lead and copper.

(1) The provisions of this subpart apply to community water systems and non-transient, non-community water systems (in this subpart referred to as ''water systems'' or ''systems'') as defined at § 141.2.

(2) The requirements of this subpart are effective as of December 30, 2024.

(3) Community water systems and non-transient non-community water systems must comply with the requirements of this subpart no later than November 1, 2027, except where otherwise specified in §§ 141.81, 141.84, 141.85, 141.86, and 141.90, or where an exemption in accordance with 40 CFR part 142, subpart C or F, has been issued by the Administrator.

(4)(i) Between October 30, 2024, and November 1, 2027, community water systems and non-transient non-community water systems must comply with 40 CFR 141.2, 141.31(d), and 141.80 through 141.91, as codified on July 1, 2020, except systems must also comply with 40 CFR 141.84(a)(1) through (10) (excluding paragraphs (a)(6) and (7)), 141.85(a)(1)(ii) and (e), 141.90(e)(1) and (13), (f)(4), and (h)(3), 141.201(a)(3)(vi) and (c)(3), and 141.202(a)(10); 40 CFR part 141, appendix A to subpart Q, entry I.C.1 (excluding § 141.90, except paragraphs (e)(1) and (13) and (f)(4)) and entry I.C.2; 40 CFR part 141, appendix B to subpart Q, entry D.23; and 40 CFR 141.31(d)(2), as codified on July 1, 2024.

(ii) If an exemption from subpart I of this part has been issued in accordance with 40 CFR part 142, subpart C or F, prior to December 16, 2021, then the water systems must comply with 40 CFR 141.80 through 141.91, as codified on July 1, 2020, until the expiration of that exemption.

(b) *Scope.* The regulations in this subpart constitute a treatment technique rule that includes treatment techniques to control corrosion, treat source water, replace service lines, and provide public education. The regulations in this subpart include requirements to support the treatment technique including a service line inventory, tap sampling, and monitoring for lead in schools and child care facilities. Some of the requirements in this subpart only apply if there is an exceedance of the lead or copper action levels, specified in paragraph (c) of this section, as measured in samples collected at consumers' taps.

(c) *Lead and copper action levels and method for determining whether there is an exceedance of the action level.* Action levels must be determined based on tap water samples that must be considered for inclusion under § 141.86(e) for the purpose of calculating the 90th percentile and tested using the analytical methods specified in § 141.89. The action levels described in this paragraph (c) are applicable to all sections of subpart I of this part. Action levels for lead and copper are as follows:

(1) The lead action level is exceeded if the 90th percentile concentration of lead as specified in paragraph (c)(3) of this section is greater than 0.010 mg/L.

(2) The copper action level is exceeded if the 90th percentile concentration of copper as specified in paragraph (c)(3) of this section is greater than 1.3 mg/L.

(3) For purposes of this subpart, the 90th percentile concentration must be derived as follows:

(i) For water systems that do not have Tier 1 and/or Tier 2 sites and only have sites identified as Tier 3, 4, or 5 under § 141.86(a):

(A) The results of all lead or copper samples taken during a tap sampling period and eligible for inclusion in the 90th percentile calculation under § 141.86(e) must be placed in ascending order from the sample with the lowest concentration of lead or copper to the sample with the highest concentration of lead or copper. Each sampling result

must be assigned a number, in ascending order beginning with the number 1 for the sample with the lowest concentration of lead or copper. The number assigned to the sample with the highest concentration must be equal to the total number of samples taken and considered for inclusion in the 90th percentile calculation, in accordance with § 141.86(e).

(B) The number of samples taken during the tap sampling period must be multiplied by 0.9.

(C) The 90th percentile concentration is the concentration of lead or copper in the numbered sample yielded after multiplying the number of samples by 0.9 in paragraph (c)(3)(i)(B) of this section.

(D) For water systems that collect five samples per tap sampling period, the 90th percentile concentration is the average of the highest and second highest concentration from the results in paragraph (c)(3)(i)(A) of this section.

(E) For a water system that is allowed by the State to collect fewer than five samples in accordance with § 141.86(a)(2) or has failed to meet their required minimum number of samples and collected fewer than five samples, the sample result with the highest concentration from the results in paragraph (c)(3)(i)(A) of this section is considered the 90th percentile value.

(ii) For water systems with sites identified as Tier 1 or 2 under § 141.86(a) with sufficient Tier 1 and 2 sites to meet the minimum number of sites required in § 141.86(c) or (d) as applicable:

(A) For lead, water systems must include the higher of the first-liter and fifth-liter lead sample results at each Tier 1 and 2 site (or first-liter lead sample if tiering is based on premise plumbing) taken during the tap sampling period in paragraphs (c)(3)(ii)(B) through (D) of this section. For copper, water systems must include all first-liter copper samples collected at each Tier 1 and 2 site taken during the tap sampling period. Lead or copper sample results from Tier 3, 4, or 5 sites cannot be included in this calculation.

(B) The results of the lead or copper samples taken during a tap sampling period and eligible for inclusion in the 90th percentile calculation under § 141.86(e) identified in paragraph (c)(3)(ii)(A) of this section must be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result must be assigned a number, in ascending order beginning with the number 1 for the sample with the lowest concentration. The number assigned to the sample with the highest concentration must be equal to the total number of samples.

(C) The number of samples identified in paragraph (c)(3)(ii)(B) must be multiplied by 0.9.

(D) The 90th percentile concentration is the concentration of lead or copper in the numbered sample yielded after multiplying the number of samples by 0.9 in paragraph (c)(3)(ii)(C) of this section.

(E) For water systems that collect samples from five sites per tap sampling period, the 90th percentile concentration is the average of the highest and second highest concentration from the results in paragraph (c)(3)(ii)(B) of this section.

(F) For a water system that is allowed by the State to collect fewer than five copper samples or five first-liter-and-fifth-liter-paired lead samples in accordance with § 141.86(a)(2), or has failed to collect at least five copper samples or five first-liter-and fifth-liter-paired lead samples, the sample result with the highest concentration from the results in paragraph (c)(3)(ii)(B) is considered the 90th percentile value.

(iii) For water systems with sites identified as Tier 1 or 2 under § 141.86(a) with an insufficient number of Tier 1 or 2 sites to meet the minimum number of sites required in § 141.86(c) or (d) as applicable:

(A) For lead, the system must use the higher value of the first-liter and fifth-liter lead sample for each Tier 1 or 2 site (or first-liter lead sample if tiering is based on premise plumbing) and the first-liter lead samples from sites in the next highest available tier (*i.e.,* Tier 3, 4, and 5) to meet the minimum number of sites required in § 141.86(c) or (d) sampled during a tap sampling period for the steps in paragraphs (c)(3)(iii)(B) through (D) of this section. For copper, the system must use all first-liter copper samples collected.

(B) The results of all of the lead or copper samples identified in paragraph (c)(3)(iii)(A) of this section must be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. The water system must reduce this list to only include samples with the highest concentrations such that the number of sample results equals the minimum number of sites required to be sampled by § 141.86(c) or (d), as applicable. From this reduced list, each sampling result must be assigned a number, in ascending order beginning with the number 1 for the sample with the lowest concentration. The number assigned to the sample with the highest concentration must be equal to the minimum number of sites required by § 141.86(c) or (d), as applicable.

(C) The number of samples identified in paragraph (c)(3)(iii)(B) must be multiplied by 0.9.

(D) The 90th percentile concentration is the concentration of lead or copper in the numbered sample yielded after multiplying the number of samples by 0.9 in paragraph (c)(3)(iii)(C) of this section.

(E) For water systems that collect samples from five sites per tap sampling period, the 90th percentile concentration is the average of the highest and second highest concentration from the results in paragraph (c)(3)(iii)(B) of this section.

(F) For a water system that is allowed by the State to collect fewer than five copper samples or five first-liter-and-fifth-liter-paired lead samples in accordance with § 141.86(a)(2), or has failed to collect at least five copper samples or five first-and-fifth—liter-paired lead samples, the sample result with the highest concentration from the results in paragraph (c)(3)(iii)(B) is considered the 90th percentile value.

(G) If a water system does not collect enough samples sufficient to meet the minimum number of sites required in § 141.86(c) or (d), the system must calculate the 90th percentile lead and copper levels following the steps in § 141.80(c)(3)(i)(A) through (C).

■ 5. Revise § 141.81 to read as follows:

§ 141.81 Applicability of corrosion control treatment steps to small, medium, and large water systems.

(a) *Corrosion control treatment.* All water systems are required to install, optimize, or re-optimize optimal corrosion control treatment (OCCT) in accordance with this section. This section sets forth when a system must complete the corrosion control treatment steps under paragraph (d) or (e) of this section based on size, whether the system has corrosion control treatment, and whether it has exceeded the lead practical quantitation limit, lead action level, and/or the copper action level.

(1) *Large water systems (serving >50,000 people).* (i) Large water systems with corrosion control treatment that exceed either the lead action level or copper action level must complete the re-optimized OCCT steps specified in paragraph (d) of this section unless the system:

(A) Has re-optimized OCCT once under paragraph (d) of this section after the compliance date in § 141.80(a)(3);

(B) Is meeting optimal water quality parameters designated by the State; and

(C) Is continuing to operate and maintain corrosion control treatment as required in § 141.82(g).

(ii) The State may require a large water system that does not have to re-optimize under paragraphs (a)(1)(i)(A) through (C) of this section to re-optimize under § 141.82(h).

(iii) A large water system must meet the requirements under paragraph (d) of this section if it exceeds the lead action level at the end of a tap sampling period after completing service line replacement in accordance with the requirements in § 141.84(d) and there are no lead, galvanized requiring replacement, or lead status unknown service lines remaining in the system's inventory.

(iv) Large water systems with corrosion control treatment with 90th percentile results as calculated in accordance with § 141.80(c)(3) that exceed the lead practical quantitation limit of 0.005 mg/L but do not exceed the lead action level or the copper action level may be required by the State to complete the re-optimized OCCT steps in paragraph (d) of this section.

(v) Large water systems without corrosion control treatment with 90th percentile results as calculated in accordance with § 141.80(c)(3) that exceed either the lead practical quantitation limit of 0.005 mg/L or the copper action level must complete steps to study and install OCCT, as specified in paragraph (e) of this section.

(2) *Medium water systems (serving >10,000 and ≤50,000 people).* (i) Medium water systems with corrosion control treatment that exceed either the lead action level or copper action level must complete the re-optimized OCCT steps specified in paragraph (d) of this section unless the system:

(A) Has re-optimized OCCT once under paragraph (d) of this section after the compliance date in § 141.80(a)(3);

(B) Is meeting optimal water quality parameters designated by the State; and

(C) Is continuing to operate and maintain corrosion control treatment as required in § 141.82(g).

(ii) The State may require a medium water system that does not have to re-optimize under paragraphs (a)(2)(i)(A) through (C) of this section to re-optimize under § 141.82(h).

(iii) After completing service line replacement in accordance with the requirements in § 141.84(d) and there are no lead, galvanized requiring replacement, or lead status unknown service lines remaining in the inventory, if at the end of a subsequent tap sampling period, the system exceeds the lead action level, a medium water system with corrosion control treatment must meet the requirements under paragraph (d) of this section.

(iv) Medium water systems with corrosion control treatment that do not exceed either the lead action level or the copper action level and do not have optimal water quality parameters designated by the State must complete the steps specified in paragraph (d) of this section starting with step 6 under paragraph (d)(6) of this section unless the system is deemed optimized under paragraph (b)(3) of this section.

(v) Medium water systems without corrosion control treatment that exceed either the lead or copper action level must complete the OCCT steps specified in paragraph (e) of this section.

(3) *Small water systems (serving ≤10,000 people) and non-transient non-community water systems.* (i) Small and non-transient non-community water systems with corrosion control treatment that exceed either the lead action level or the copper action level, must complete the re-optimized OCCT steps specified in paragraph (d) of this section unless the system:

(A) Has re-optimized OCCT once under paragraph (d) of this section after the compliance date in § 141.80(a)(3);

(B) Is meeting optimal water quality parameters designated by the State; and

(C) Is continuing to operate and maintain corrosion control treatment as required in § 141.82(g).

(ii) The State may require a small water system that does not have to re-optimize under paragraphs (a)(3)(i)(A) through (C) of this section to re-optimize under § 141.82(h).

(iii) After completing service line replacement in accordance with the requirements in § 141.84(d) and there are no lead, galvanized requiring replacement, or lead status unknown service lines remaining in the inventory, if at the end of a subsequent tap sampling period, the system exceeds the lead action level, a small water system with corrosion control treatment must meet the requirements under paragraph (d) of this section.

(iv) Small and non-transient non-community water systems without corrosion control treatment that exceed either the lead action level or copper action level must complete the corrosion control treatment steps specified in paragraph (e) of this section.

(b) *Systems deemed to have optimized corrosion control.* A system without corrosion control treatment is deemed to have OCCT as defined in § 141.2 if the system meets the requirement of either paragraph (b)(1) or (3) of this section. A system with corrosion control treatment is deemed to have OCCT as defined in § 141.2 or re-optimized OCCT if the system meets the requirements of either paragraphs (b)(1) and (4) or (b)(3) and (4) of this section. Systems must submit documentation of meeting the applicable requirements to the State in accordance with § 141.90(c)(1) by the applicable deadline for submitting tap sampling results under § 141.90(a)(2).

(1) A medium water system without corrosion control treatment or a small water system is deemed to have OCCT if the water system does not exceed the lead action level and copper action level during two consecutive six-month tap monitoring periods and then remains at or below the lead action level and copper action level in all tap sampling periods conducted in accordance with § 141.86.

(i) A small water system with corrosion control treatment is not eligible to be deemed to have OCCT pursuant to this paragraph (b)(1) where the State has set optimal water quality parameters (OWQPs) under paragraph (d) or (e) of this section.

(ii) If a medium water system without corrosion control treatment or a small water system deemed to have OCCT under this paragraph (b)(1) exceeds the lead action level or copper action level, the system must follow the requirements in paragraph (a) of this section.

(2) [Reserved]

(3) A water system is deemed to have optimized or re-optimized corrosion control treatment if it submits tap sampling results in accordance with § 141.86 demonstrating that the 90th percentile lead level is less than or equal to the lead practical quantitation limit of 0.005 mg/L for two consecutive six-month tap monitoring periods, it does not exceed the copper action level for two consecutive six-month tap monitoring periods, and it does not have OWQPs designated by the State under paragraph (d) or (e) of this section.

(i) A system with 90th percentile tap sampling results that later exceeds the lead practical quantitation limit of 0.005 mg/L or copper action level during any tap sampling period is not eligible to be deemed to have optimized OCCT in accordance with this paragraph (b)(3) until the system has completed the treatment steps specified in paragraph (d) or (e) of this section.

(ii) A system deemed to have OCCT in accordance with this paragraph (b)(3) must continue monitoring for lead and copper at the tap no less frequently than once every three calendar years using the reduced number of sites specified in § 141.86(d)(1) and collecting samples at

times and locations specified in § 141.86(d)(2)(iii).

(4) A system with corrosion control treatment deemed to have OCCT under this paragraph (b) must continue to operate and maintain the corrosion control treatment and also meet any additional requirements that the State determines are appropriate to ensure OCCT is maintained.

(c) [Reserved]

(d) *Treatment steps and deadlines for water systems re-optimizing optimal corrosion control treatment.* Water systems with corrosion control treatment that are required to re-optimize optimal corrosion control treatment under paragraph (a) of this section must complete the following steps (described in the referenced portions of §§ 141.82, 141.86, and 141.87) by the indicated time periods. Water systems must conduct tap sampling for lead and copper in accordance with the requirements of § 141.86 while they complete the corrosion control steps in this section.

(1) *Step 1: Initiate mandatory pipe rig/loop or CCT study or treatment recommendation.* (i) Large or medium water systems with lead service lines that exceed the lead action level must harvest lead service lines from the distribution system and construct flowthrough pipe rigs/loops and operate the rigs/loops with finished water within one year after the end of the tap sampling period in which they exceeds the lead action level. These water systems must proceed to step 3 in paragraph (d)(3) of this section and conduct the corrosion control studies for re-optimization under paragraph (d)(3)(i) of this section using the pipe rigs/loops.

(ii) Large water systems without lead service lines that exceed the lead action level or copper action level must conduct the corrosion control studies for re-optimization under paragraph (d)(3)(ii) of this section (step 3).

(iii) A water system other than those covered in paragraph (d)(1)(i) or (ii) of this section must recommend re-optimized optimal corrosion control treatment (§ 141.82(a)) within six months after the end of the tap sampling period in which the system exceeded either the lead action level or copper action level.

(iv) Systems may make an existing corrosion control treatment modification recommendation to the State within six months after the end of the tap sampling period in which the system exceeded the lead action level. The State must evaluate a system's past corrosion control treatment study results prior to approving an existing treatment modification. When a State approves existing treatment modifications, the State must specify re-optimized OCCT within 12 months after the end of the tap sampling period in which the system exceeded the lead action level. The system must complete modifications to corrosion control treatment to have re-optimized OCCT installed within six months of the State specifying re-optimized OCCT. These systems must proceed to step 6 in paragraph (d)(6) of this section and conduct follow-up monitoring.

(2) *Step 2: State requires CCT study or State designates re-optimized OCCT.* Within one year after the end of the tap sampling period in which a medium water system without lead service lines or a small system exceeded the lead action level or copper action level, the State may require the water system to perform corrosion control studies for re-optimization (§ 141.82(c)(2)). If the State does not require the system to perform such studies, the State must specify re-optimized optimal corrosion control treatment (§ 141.82(d)) within the timeframes specified in paragraphs (d)(2)(i) and (ii) of this section. The State must provide its determination to the system in writing:

(i) For a medium water system, within one year after the end of the tap sampling period during which such water system exceeded the lead action level or copper action level.

(ii) For a small water system, within 18 months after the end of the tap sampling period in which such water system exceeded the lead action level or copper action level.

(3) *Step 3: Study duration.* (i) Any water system with lead service lines that exceeds the lead action level, in accordance with paragraph (d)(1)(i) of this section, must complete the pipe rig/loop corrosion control treatment studies and recommend re-optimized OCCT within 30 months after the end of the tap sampling period in which the system exceeded the lead action level.

(ii) If the water system is required to perform corrosion control studies under paragraph (d)(1)(ii) or (d)(2) of this section, the water system must complete the studies (§ 141.82(c)) and recommend re-optimized OCCT within 18 months after the end of the tap sampling period in which the system exceeded the lead or copper action level or after the State requires that such studies be conducted.

(4) *Step 4: State designation of re-optimized OCCT based on CCT study results.* The State must designate re-optimized OCCT (§ 141.82(d)) within six months after the water system completes paragraph (d)(3)(i) or (ii) of this section (step 3).

(5) *Step 5: Re-optimized OCCT installation deadlines.* Water systems must install re-optimized OCCT (§ 141.82(e)) within one year after the State completes paragraph (d)(4) of this section (step 4) or the State completes paragraph (d)(2)(i) or (ii) of this section (step 2).

(6) *Step 6: Follow-up monitoring.* Water systems must complete standard monitoring for at least two consecutive tap monitoring periods under § 141.86(c)(2)(iii)(D) and water quality parameter monitoring under § 141.87(b)(3) after completing paragraph (d)(5) of this section (step 5). The first tap monitoring period for standard monitoring must begin on January 1 or July 1, whichever is sooner, after completing paragraph (d)(5) (step 5).

(7) *Step 7: State sets optimal water quality parameters (OWQPs).* The State must review the water system's re-optimized OCCT and designate OWQPs (§ 141.82(f)) within six months after completing paragraph (d)(6) of this section (step 6).

(8) *Step 8: Systems meet OWQPs to demonstrate compliance.* Water systems must comply with the State-designated OWQPs (§ 141.82(g)) and conduct tap sampling under § 141.86(c)(2)(iii)(E) and water quality parameter monitoring under § 141.87(b)(4).

(e) *Treatment steps and deadlines for systems without corrosion control treatment.* Except as provided in paragraph (b) of this section, water systems without corrosion control treatment must complete the following corrosion control treatment steps (described in the referenced portions of §§ 141.82, 141.86, and 141.87) by the indicated time periods. Water systems must conduct tap sampling for lead and copper in accordance with the requirements of § 141.86 while they complete the corrosion control steps in this section.

(1) *Step 1: Initiate mandatory pipe rig/loop or CCT study or treatment recommendation.* (i) A medium or large water system with lead service lines that exceeds the lead action level must harvest lead pipes from the distribution system and construct flowthrough pipe rigs/loops and operate the rigs/loops with finished water within one year after the end of the tap sampling period during which the system exceeded the lead action level. These water systems must proceed to step 3 in paragraph (e)(3) of this section and conduct the corrosion control studies for optimization under paragraph (e)(3)(i) of this section using the pipe rigs/loops.

(ii) Large water systems under paragraph (a)(1)(v) of this section must

conduct the corrosion control studies for optimization under paragraph (e)(3) of this section (step 3).

(iii) A water system other than those covered in paragraph (e)(1)(i) or (ii) of this section must recommend optimal corrosion control treatment (OCCT) (§ 141.82(a)) within six months after the end of the tap sampling period during which the system exceeded either the lead action level or copper action level.

(2) *Step 2: State requires CCT study or State designates OCCT.* Within one year after the end of the tap sampling period in which the water system exceeded the lead action level or copper action level, the State may require the water system to perform corrosion control studies (§ 141.82(b)(1)) if those studies are not otherwise required by this subpart. The State must notify the system in writing of the requirement in the preceding sentence. If the State does not require the system to perform such studies, the State must specify OCCT (§ 141.82(d)) within the timeframes established in paragraphs (e)(2)(i) and (ii) of this section. The State must provide its determination to the system in writing:

(i) For a medium water system, within 18 months after the end of the tap sampling period in which such water system exceeds the lead action level or copper action level.

(ii) For a small water system, within 24 months after the end of the tap sampling period in which such water system exceeds the lead action level or copper action level.

(3) *Step 3: Study duration.* (i) Large and medium water systems with lead service lines that exceed the lead action level must complete the corrosion control treatment studies and recommend OCCT within 30 months after the end of the tap sampling period in which they exceeded the lead action level.

(ii) If a water system is required to perform corrosion control studies under paragraph (e)(1)(ii) or (e)(2) of this section, the water system must complete the studies (§ 141.82(c)) and recommend OCCT within 18 months after the end of the tap sampling period in which the system exceeded the lead or copper action level or the State notifies the system in writing that such studies must be conducted.

(4) *Step 4: State designation of OCCT based on CCT study results.* The State must designate OCCT (§ 141.82(d)) within six months after water systems complete paragraph (e)(3)(i) or (ii) of this section (step 3).

(5) *Step 5: OCCT installation deadlines.* Water systems must install OCCT (§ 141.82(e)) within 24 months after the State designates OCCT under paragraph (e)(2) or (4) of this section (step 2 or step 4).

(6) *Step 6: Follow-up monitoring.* Water systems must complete standard monitoring for at least two consecutive tap monitoring periods under § 141.86(c)(2)(iii)(D) and water quality parameter monitoring under § 141.87(b)(3) after completing paragraph (e)(5) of this section (step 5). The first tap monitoring period for standard monitoring must begin on January 1 or July 1, whichever is sooner, after completing paragraph (e)(5) (step 5).

(7) *Step 7: State sets optimal water quality parameters (OWQPs).* The State must review the water system's installation of treatment and designate OWQPs (§ 141.82(f)) within six months after completing paragraph (e)(6) of this section (step 6).

(8) *Step 8: Systems meet OWQPs to demonstrate compliance.* Water systems must comply with the State-designated OWQPs (§ 141.82(g)) and conduct tap sampling under § 141.86(c)(2)(iii)(E) and water quality parameter monitoring under § 141.87(b)(4).

(f) *Systems with lead or galvanized requiring replacement service lines that can complete full service line replacement in five years or less.* (1) A water system with one or more lead or galvanized requiring replacement service lines is not required to complete the steps under paragraph (d) or (e) of this section if the system meets all the following requirements:

(i) Deadline to complete mandatory service line replacement.

(A) A water system must complete the service line replacement requirements under § 141.84(d) in five years or less from the date of the end of the tap sampling period in which the system first exceeds the lead action level; or

(B) A large water system without corrosion control treatment must complete the service line replacement requirements under § 141.84(d) in five years or less from the date of the end of the tap sampling period in which the system's 90th percentile results first exceed the lead practical quantitation limit; and

(C) For a water system with less than five years remaining to complete mandatory service line replacement in accordance with § 141.84(d), the system must complete the service line replacement requirements under this paragraph (f)(1)(i) by that deadline.

(ii) At a minimum, a system must replace the total number of lead and/or galvanized requiring replacement service lines each year, as identified in that system's inventory on the date of the end of the tap sampling period in which the system first exceeds the lead action level or in which the system's 90th percentile first exceeds the lead practical quantitation limit, whichever applies, at an annual rate equally divided by the total number of years for service line replacement provided in paragraph (f)(1)(i) of this section. For purposes of calculating the annual rate, the system must replace all lead and galvanized requiring replacement service lines within the least number of years feasible not to exceed five years from the date of the end of the tap sampling period in which the system first exceeds the lead action level or in which the system's 90th percentile first exceeds the lead practical quantitation limit, whichever applies. If the State determines a replacement deadline less than five years is feasible for a water system, the system must replace service lines by that deadline and establish an annual replacement rate based on that number of years until that deadline.

(iii) By the end of the five-year-or-less period in paragraph (f)(1)(i) of this section, the system must have replaced all lead and galvanized requiring replacement service lines calculated in accordance with § 141.84(d)(6) (*i.e.,* no lead, galvanized requiring replacement or lead status unknown service lines remain in the inventory), and identified the material of all lead status unknown service lines, completed the inventory validation requirements in accordance with § 141.84(b)(5), and replaced all unknowns found to be lead or galvanized requiring replacement service lines.

(iv) Except as provided in this section, all other requirements in § 141.84(d) apply.

(2) Throughout the five-year-or-less period in paragraph (f)(1)(i) of this section, systems with corrosion control treatment must continue to operate and maintain corrosion control treatment in addition to completing the mandatory service line replacement requirements under this section.

(3) A water system that does not replace lead and/or galvanized requiring replacement service lines calculated in accordance with § 141.84(d)(6) at the minimum annual rate provided in paragraph (f)(1)(ii) of this section in any one year of the five-year-or-less period in paragraph (f)(1)(i) of this section or complete the service line replacement requirements under § 141.84(d) in accordance with paragraph (f)(1)(iii) of this section, must meet the requirements under paragraph (d) or (e) of this section, as applicable, starting immediately after the system fails to meet the annual removal requirements under paragraph (f)(1)(ii).

(4) At the end of each year of the five-year-or-less period, the system must submit written documentation to the State about the number of lead and galvanized requiring replacement service lines removed that year and whether the minimum annual replacement rate in paragraph (f)(1)(ii) of this section was met. If a system reports or a State determines that the system did not meet its minimum annual replacement rate that year, the system is no longer eligible to defer the requirements under paragraph (d) or (e) of this section, and must meet those requirements, as applicable.

(5) After completing service line replacement in accordance with the requirements in this paragraph (f), a water system must meet the requirements under paragraph (d) or (e) of this section, as applicable, if at the end of a subsequent tap sampling period, the system either exceeds the lead action level or the lead practical quantitation limit, whichever is applicable.

(g) *Completing corrosion control steps for small and medium water systems without corrosion control treatment.* (1) Any small or medium water system without corrosion control treatment required to complete the steps in paragraph (e) of this section that does not exceed the lead action level and copper action level during two consecutive six-month tap monitoring periods pursuant to § 141.86 prior to the start of step 3 in paragraph (e)(3) of this section or prior to or concurrent with the end of step 4 in paragraph (e)(4) of this section may stop completing the steps and is not required to complete paragraph (e)(3) or (5) (step 3 or step 5), respectively, except that medium water systems without corrosion control treatment and with lead service lines must complete a corrosion control treatment study under paragraph (e)(3)(i) of this section. A 90th percentile level at or below the lead action level or copper action level based on less than the required minimum number of samples under § 141.86 cannot be used to meet the requirements of this paragraph (g)(1). Eligible systems can only use the exception in this paragraph (g)(1) once.

(2) Any system that starts step 5 in accordance with paragraph (e)(5) of this section must complete all remaining steps (*i.e.,* steps 6 through 8) in paragraphs (e)(6) through (8) of this section and is not permitted to stop the steps.

(3) Any small or medium water system without corrosion control treatment under paragraph (g)(1) of this section that stopped the steps in paragraph (e) of this section and subsequently exceeds either the lead action level or copper action level must complete the corrosion control treatment steps in paragraph (e) beginning with the first treatment step that was not completed.

(4) The State may require a water system to repeat treatment steps previously completed by the water system when the State determines that this is necessary to implement the treatment requirements of this section. The State must notify the system in writing of such a determination and explain the basis for its decision.

(h) *Notification requirements for upcoming long-term change in treatment or source.* At a time specified by the State, or if no specific time is designated, as early as possible but no later than six months prior to the addition of a new source or any long-term change in water treatment, a water system must submit written documentation describing the addition of a new source or long-term change in treatment to the State. Systems may not implement the addition of a new source or long-term treatment change without State approval. The State must review and approve the addition of a new source or long-term change in water treatment before it can be implemented by the water system. The State may require any such water system to take actions before or after the addition of a new source or long-term treatment change to ensure that the water system will operate and maintain optimal corrosion control treatment, such as additional water quality parameter monitoring, additional lead or copper tap sampling, and re-evaluating corrosion control treatment. Examples of long-term treatment changes include but are not limited to the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants (*e.g.,* alum to ferric chloride), and switching corrosion inhibitor products (*e.g.,* orthophosphate to blended phosphate). Long-term treatment changes can also include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes where a new source has not been added.

■ 6. Revise § 141.82 to read as follows:

§ 141.82 Description of corrosion control treatment requirements.

This section provides the requirements for systems and States designating optimal corrosion control treatment (OCCT) for a system that is optimizing or re-optimizing OCCT. All systems must complete the corrosion control treatment requirements in this section as applicable under § 141.81.

(a) *System recommendation regarding corrosion control treatment.* (1) Any system without corrosion control treatment that is required to recommend a treatment option in accordance with § 141.81(e)(1)(iii) must, based on the results of lead and copper tap sampling and water quality parameter monitoring, recommend designating one or more of the corrosion control treatments listed in paragraph (c)(1) of this section to the State as the optimal corrosion control treatment for that system. The State may require the system to conduct additional water quality parameter monitoring to assist the State in reviewing the system's recommendation.

(2) Any system with corrosion control treatment that exceeds the lead action level that is required to recommend a treatment option to the State in accordance with § 141.81(d)(1)(iii) must recommend designating one or more of the corrosion control treatments listed in paragraph (c)(2) of this section as the optimal corrosion control treatment for that system.

(3) States may waive the requirement for a system to recommend OCCT if the State requires the system, in writing, to complete a corrosion control study within three months after the end of the tap sampling period in which the lead or copper action level exceedance occurred. These systems must proceed directly to paragraph (c) of this section and complete a corrosion control study.

(b) *State decision to require studies to identify initial OCCT under § 141.81(e)(2) and re-optimized OCCT under § 141.81(d)(2).* (1) The State may require any small or medium water system without corrosion control treatment that exceeds either the lead action level or copper action level to perform corrosion control treatment studies under paragraph (c)(1) of this section to identify OCCT for the system.

(2) The State may require any small or medium water system with corrosion control treatment exceeding either the lead action level or copper action level to perform corrosion control treatment studies under paragraph (c)(2) of this section to identify re-optimized OCCT for the system (*i.e.,* OCCT after a re-optimization evaluation).

(c) *Performance of corrosion control studies.* (1) Systems without corrosion

control treatment required to conduct corrosion control studies under § 141.81(e) must evaluate the effectiveness of each of the following treatments, and if appropriate, combinations of the following treatments, to identify OCCT for the system:

(i) Alkalinity and pH adjustment;

(ii) The addition of an orthophosphate- or a silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective corrosion inhibitor residual concentration in all test samples;

(iii) The addition of an orthophosphate-based corrosion inhibitor at a concentration sufficient to maintain an orthophosphate residual concentration of 1 mg/L (as PO_4) in all test samples; and

(iv) The addition of an orthophosphate-based corrosion inhibitor at a concentration sufficient to maintain an orthophosphate residual concentration of 3 mg/L (as PO_4) in all test samples.

(2) Systems with corrosion control treatment required to conduct corrosion control studies under § 141.81(d) must evaluate the effectiveness of the following treatments, and if appropriate, combinations of the following treatments, to identify re-optimized OCCT for the system:

(i) Alkalinity and/or pH adjustment or re-adjustment;

(ii) The addition of an orthophosphate- or a silicate-based corrosion inhibitor at a concentration sufficient to maintain an effective corrosion inhibitor residual concentration in all test samples if no such inhibitor is currently utilized;

(iii) The addition of an orthophosphate-based corrosion inhibitor at a concentration sufficient to maintain an orthophosphate residual concentration of 1 mg/L (as PO_4) in all test samples unless the current inhibitor process already meets this residual; and

(iv) The addition of an orthophosphate-based corrosion inhibitor at a concentration sufficient to maintain an orthophosphate residual concentration of 3 mg/L (as PO_4) in all test samples unless the current inhibitor process already meets this residual.

(3) Systems must evaluate each of the corrosion control treatments specified in paragraph (c)(1) or (2) of this section individually or, if appropriate, in combinations, using pipe rig/loop tests, metal coupon tests, partial-system tests, and/or analyses based on documented analogous treatments with similar size systems that have a similar water chemistry and similar distribution system configurations. Large and medium water systems with lead service lines, and other systems as required by the State, that exceed the lead action level must conduct pipe rig/loop studies using harvested lead service lines from their distribution systems to assess the effectiveness of corrosion control treatment options on the existing pipe scale. Metal coupon tests can be used as a screen to reduce the number of options evaluated in the pipe rig/loop studies to the current water quality and at least two additional treatment options.

(4) Systems must measure the following water quality parameters in any tests conducted under paragraph (c)(3) of this section both before and after evaluating the corrosion control treatments listed in paragraph (c)(1) or (2) of this section:

(i) Lead;

(ii) Copper;

(iii) pH;

(iv) Alkalinity;

(v) Orthophosphate as PO_4 (when an orthophosphate-based inhibitor is used);

(vi) Silicate (when a silicate-based inhibitor is used); and

(vii) Any additional parameters necessary to evaluate the effectiveness of a corrosion control treatment as determined by the State.

(5) Systems must identify all chemical or physical constraints that limit or prohibit the use of a particular corrosion control treatment and document those constraints by providing either of the following:

(i) Data and documentation showing a particular corrosion control treatment has adversely affected other drinking water treatment processes when used by another water system with comparable water quality characteristics. Systems using metal coupon tests to screen and/or pipe rig/loop studies to evaluate treatment options cannot exclude treatment strategies from the studies based on the constraints identified in this paragraph (c)(5)(i).

(ii) Data and documentation demonstrating the water system previously attempted to evaluate a particular corrosion control treatment and found the treatment was ineffective or adversely affects other drinking water quality treatment processes. Systems using metal coupon tests to screen and/or pipe rig/loop studies to evaluate treatment options cannot exclude treatment strategies from the studies based on the constraints identified in this paragraph (c)(5)(ii), unless the treatment was found to be ineffective in a previous pipe rig/loop study.

(6) Systems must evaluate the effect of the chemicals used for corrosion control treatment on other drinking water quality treatment processes. Systems using metal coupon tests to screen and/or pipe rig/loop studies to evaluate treatment options cannot exclude any of the required treatment strategies specified in paragraph (c)(1) or (2) of this section from the studies based on the effects identified in this section.

(7) Based on the data and analysis for each treatment option evaluated under this paragraph (c), systems must recommend to the State, in writing, the treatment option that the corrosion control studies indicate constitutes OCCT for that system as defined in § 141.2. Systems must provide the State with a rationale for the OCCT recommendation and all supporting documentation specified in paragraph (c)(1) or (2) and paragraphs (c)(3) through (7) of this section.

(d) *State designation of OCCT and re-optimized OCCT*—(1) *Designation of OCCT or re-optimized OCCT.* Based on available information including, where applicable, studies conducted under paragraph (c)(1) or (2) of this section and/or a system's recommended corrosion control treatment option, the State must either approve the corrosion control treatment option recommended by the system or designate alternative corrosion control treatment(s) from among those listed in paragraph (c)(1) or (2) of this section, as applicable. The State must notify the water system, in writing, of its designation of OCCT or re-optimized OCCT and explain the basis for this determination.

(i) When designating OCCT, the State must consider the effects that additional corrosion control treatment will have on water quality parameters and other drinking water quality treatment processes.

(ii) If the State requests additional information to aid its review, the water system must provide that information.

(2) [Reserved]

(e) *Installation of OCCT and re-optimized OCCT.* Each system must install and operate the OCCT or re-optimized OCCT designated by the State under paragraph (d) of this section throughout its distribution system.

(f) *State review of treatment and designation of optimal water quality parameters for OCCT and re-optimized OCCT.* The State must evaluate the results of all lead and copper tap and water quality parameter sampling submitted by the water system and determine whether the water system has installed and operated the OCCT designated by the State in paragraph (d) of this section. Upon reviewing the system's tap and water quality parameter sampling results, both before and after the water system installs

OCCT, or re-optimizes OCCT, the State must designate each of the following:

(1) A minimum value or a range of values for pH measured at each entry point to the distribution system.

(2) A minimum pH value measured in all distribution system samples. This value must be equal to or greater than 7.0, unless the State determines that meeting a pH level of 7.0 is not technologically feasible or is not necessary for OCCT.

(3) If a corrosion inhibitor is used, a minimum concentration or a range of concentrations for orthophosphate (as PO_4) or silicate measured at each entry point to the distribution system.

(4) If a corrosion inhibitor is used, a minimum orthophosphate (as PO_4) or silicate concentration measured in all tap samples that the State determines is necessary to form a passivating film on the interior walls of the pipes of the distribution system. When orthophosphate is used, for OCCT designations for systems previously without corrosion control treatment, the orthophosphate concentration must be equal to or greater than 0.5 mg/L (as PO_4) and for OCCT designations for systems previously with corrosion control treatment, the orthophosphate concentration must be equal to or greater than 1.0 mg/L, unless the State determines that meeting the applicable minimum orthophosphate residual is not technologically feasible or is not necessary for OCCT.

(5) If alkalinity is adjusted as part of OCCT, a minimum concentration or a range of concentrations for alkalinity, measured at each entry point to the distribution system and in all tap samples.

(6) The values for the applicable water quality parameters in paragraphs (f)(1) through (5) of this section must be the values the State determines reflect OCCT or re-optimized OCCT for the water system. The State may designate values for additional water quality parameters the State determines reflect OCCT or re-optimized OCCT for the water system. The State must notify the system, in writing, of these determinations and explain the basis for its decisions.

(g) *Continued operation and monitoring for OCCT and re-optimized OCCT.* All systems, including those optimizing or re-optimizing OCCT, must continue to operate and maintain OCCT, including maintaining water quality parameters at or above the minimum values or within the ranges designated by the State under paragraph (f) of this section, in accordance with this paragraph (g) for all water quality parameter samples collected under § 141.87(b)(4) through (d). The requirements of this paragraph (g) apply to all systems, including consecutive systems that distribute water that has been treated to control corrosion by another system, and any water system with corrosion control treatment, OCCT, or re-optimized OCCT that is not required to monitor water quality parameters under § 141.87.

(1) Compliance with the requirements of this paragraph (g) must be determined every six months, as specified under § 141.87(b)(4). A water system is out of compliance with the requirements of this paragraph (g) for a six-month period if it has excursions for any State-specified parameter on more than nine days, cumulatively, during the period. An excursion occurs whenever the daily value for one or more of the water quality parameters measured at a sampling location is below the minimum value or outside the range designated by the State. Daily values are calculated as set out in paragraph (g)(2) of this section. States have discretion to not include results of obvious sampling errors from this calculation. Sampling errors must still be recorded even when not included in calculations.

(2)(i) On days when more than one measurement for the water quality parameter is collected at the sampling location, the daily value must be the average of all results collected at that sampling location during the same day regardless of whether they are collected through continuous monitoring, grab sampling, or a combination of both. If EPA has approved an alternative formula under § 142.16(d)(1)(ii) of this chapter in the State's application for a program revision submitted pursuant to § 142.12 of this chapter, the State's formula must be used to aggregate multiple measurements taken at a sampling point for the water quality parameters in lieu of the formula in this paragraph (g)(2).

(ii) On days when only one measurement for the water quality parameter is collected at the sampling location, the daily value must be the result of that measurement.

(iii) On days when no measurement is collected for the water quality parameter at the sampling location, the daily value must be the daily value calculated on the most recent day on which the water quality parameter was measured at the sampling location.

(h) *Modification of State treatment determination for OCCT and re-optimized OCCT.* Upon its own initiative or in response to a request by a water system or other interested party, a State may modify its determination of OCCT under paragraph (d) of this section, or optimal water quality parameters under paragraph (f) of this section. A request for modification by a system or other interested party must be in writing, explaining why the modification is appropriate, and providing supporting documentation. The State may require a system to conduct a CCT study to support modification of the determination of OCCT or re-optimized OCCT. The State may modify its determination where it concludes that such change is necessary to ensure that the water system continues to optimize corrosion control treatment. A revised designation must be made in writing, set forth the new treatment requirements and/or optimal water quality parameters, explain the basis for the State's determination, and provide an implementation schedule for completing the treatment modifications for re-optimized corrosion control treatment.

(i) *Treatment decisions by EPA in lieu of the State on OCCT and re-optimized OCCT.* Pursuant to the procedures in § 142.19 of this chapter, the EPA Regional Administrator may review OCCT determinations made by a State under paragraph (d), (f), or (h) of this section and issue Federal corrosion control treatment determinations consistent with the requirements of paragraph (d), (f), or (h) where the EPA Regional Administrator finds that:

(1) A State failed to issue a treatment determination by the applicable deadlines contained in § 141.81;

(2) A State abused its discretion; or

(3) The technical aspects of a State's determination would be indefensible in a Federal enforcement action taken against a water system.

(j) *Distribution System and Site Assessment for tap sample sites with lead results that exceed 0.010 mg/L.* The water system must conduct the following steps when the lead results from an individual tap sample site sampled under § 141.86 exceed 0.010 mg/L and the site is included in the site sample plan under § 141.86(a)(1):

(1) *Step 1: Corrosion control treatment assessment.* Within five days of receiving the tap sampling results, the water system must sample at a water quality parameter site in accordance with paragraph (j)(1)(ii) of this section that is on the same size water main in the same pressure zone and located within a half mile radius of the site with the lead result exceeding 0.010 mg/L. Water systems without corrosion control treatment are not required to collect these samples.

(i) The water system must measure the following water quality parameters:

(A) pH;

(B) Alkalinity;

(C) Orthophosphate (as PO_4), when an inhibitor containing an orthophosphate compound is used; and

(D) Silica, when an inhibitor containing a silicate compound is used.

(ii) The water system must measure at the following locations:

(A) Water systems with an existing water quality parameter site that meets the requirements in this paragraph (j)(1) can conduct this sampling at that site.

(B) All water systems required to meet optimal water quality parameters but do not have an existing water quality parameter site that meets the requirements in this paragraph (j)(1) must add new sites to the minimum number of sites as described in § 141.87(b)(1)(i). Sites must be added until a system has twice the minimum number of sites listed in table 1 to § 141.87(b)(1)(i). When a system exceeds twice the number of sites, the State has discretion to determine if these additional newer sites can better assess the effectiveness of the corrosion control treatment and whether to remove existing sites during sanitary survey evaluation of OCCT.

(2) *Step 2: Site assessment.* Within 30 days of receiving the tap sampling results, water systems must collect and analyze a follow-up sample for lead at any tap sample site that exceeds 0.010 mg/L. These follow-up samples may use different sample volumes or different sample collection procedures to assess the source of elevated lead levels. Samples collected under this section must be submitted to the State but cannot be included in the 90th percentile calculation for compliance monitoring under § 141.86. If the water system is unable to collect a follow-up sample at a site, the water system must provide documentation to the State, as specified in § 141.90(g)(2), explaining why it was unable to collect a follow-up sample.

(3) *Step 3: Evaluate results and system treatment recommendation.* Water systems must evaluate the results of the sampling conducted under paragraphs (j)(1) and (2) of this section to determine if either localized or centralized adjustment of the OCCT or other distribution system actions are necessary and submit the recommendation to the State within six months after the end of the tap sampling period in which the site(s) exceeded 0.010 mg/L. Corrosion control treatment modification may not be necessary to address every exceedance of 0.010 mg/L. Other distribution system actions may include flushing to reduce water age. Water systems must note the cause of the elevated lead level, if known from the site assessment, in their recommendation to the State as site-specific issues can be an important factor in why the system is not recommending any adjustment of corrosion control treatment or other distribution system actions. Systems in the process of optimizing or re-optimizing OCCT under paragraphs (a) through (f) of this section do not need to submit a treatment recommendation for distribution system and site assessment.

(4) *Step 4: State approval of treatment recommendation.* The State must approve the treatment recommendation or specify a different approach within six months of completing step 3 as described in paragraph (j)(3) of this section and notify the water system in writing.

(5) *Step 5: Modifications to OCCT.* If the State-approved treatment recommendation requires the water system to adjust the OCCT process, the water system must complete modifications to its corrosion control treatment within 12 months of receiving notification from the State as described in paragraph (j)(4) of this section. Systems without corrosion control treatment required to install OCCT must follow the schedule in § 141.81(e).

(6) *Step 6: Follow-up sampling.* Water systems adjusting OCCT must complete follow-up sampling in accordance with §§ 141.86(c)(2)(iii)(D) and 141.87(b)(3) within 12 months after completing step 5 as described in paragraph (j)(5) of this section and submit sampling results to the State in accordance with §§ 141.86 and 141.87.

(7) *Step 7: State OWQP designation.* For water systems adjusting OCCT, the State must review the water system's modification of corrosion control treatment and designate optimal water quality parameters in accordance with paragraph (f) of this section within six months of receiving sampling result in paragraph (j)(6) of this section.

(8) *Step 8: Operate in compliance.* For a water system adjusting OCCT, the water system must operate in compliance with the State-designated optimal water quality parameters in accordance with paragraph (g) of this section and continue to conduct tap sampling in accordance with §§ 141.86(c)(2)(iii)(E) and 141.87(b)(4).

■ 7. Amend § 141.83 by revising paragraph (a)(4) to read as follows:

§ 141.83 Source water treatment requirements.

* * * * *

(a) * * *

(4) *Step 4.* The system shall complete follow-up tap water monitoring (§ 141.86(c)(2)(iii)(F)) and source water monitoring (§ 141.88(c)) within 36 months after completion of step 2 as described in paragraph (a)(2) of this section.

* * * * *

■ 8. Revise § 141.84 to read as follows:

§ 141.84 Service line inventory and replacement requirements.

(a) *Service line and connector inventory development.* All water systems must develop a service line inventory that identifies the material and location of each service line connected to the public water distribution system. The inventory must include all service lines connected to the public water distribution system regardless of ownership status (*e.g.,* where service line ownership is shared, the inventory includes both the portion of the service line owned by the water system and the portion of the service line owned by the customer). The inventory must meet the following requirements:

(1) All water systems are required to develop an initial inventory and submit it to the State by October 16, 2024, as specified in § 141.80(a)(4)(i).

(2) All water systems must develop an updated initial inventory, known as the ''baseline inventory''. Systems must submit the baseline inventory to the State by the compliance date in § 141.80(a)(3). Newly regulated public water systems, as defined in § 141.2, must develop a baseline inventory on a schedule established by the State that does not exceed three years from the date the system becomes subject to National Primary Drinking Water Regulations in this part. The baseline inventory must include each service line and identified connector that is connected to the public water distribution system regardless of ownership status (*e.g.,* where service line ownership is shared, the inventory includes both the portion of the service line owned by the water system and the portion of the service line owned by the customer).

(i) For the baseline inventory, water systems must conduct a review of any information listed in paragraphs (b)(2)(i) through (iii) of this section that describes connector materials and locations. Water systems must also conduct a review of any information on lead and galvanized iron or steel materials that they have identified pursuant to § 141.42(d) to identify connector materials and locations. The water system may use other sources of information not listed in paragraphs (b)(2)(i) through (iii) if approved or required by the State.

(ii) Water systems must include each connector identified in paragraph (a)(2)(i) of this section in their baseline inventory. Connector materials must be categorized in the following manner:

(A) ''Lead'' where the connector is made of lead.

(B) ''Non-Lead'' where the connector is determined through an evidence-based record, method, or technique not to be made of lead. Water systems are not required to identify the specific material of a non-lead connector; however, they may use the material (*e.g.,* copper or galvanized) as an alternative to categorizing it as ''Non-Lead''.

(C) ''Unknown'' where the material of the connector is not known.

(D) ''No connector present'' where there is no connector at the location (*e.g.,* where a service line directly connects a water main to a building inlet).

(iii) All water systems must include any new information on service line materials from all applicable sources described in paragraph (b)(2) of this section in the baseline inventory.

(3) Each service line, or portion of the service line where ownership is shared, must be categorized in the following manner:

(i) ''Lead'' where the service line is a lead service line as defined in § 141.2.

(ii) ''Galvanized Requiring Replacement'' where the service line is a galvanized requiring replacement service line as defined in § 141.2.

(iii) ''Non-Lead'' where the service line is determined through an evidence-based record, method, or technique not to be a lead or galvanized requiring replacement service line. Water systems are not required to identify the specific material of a non-lead service line; however, they may use the material (*e.g.,* plastic or copper) as an alternative to categorizing it as ''Non-Lead''.

(iv) ''Lead Status Unknown'' or ''Unknown'' where the service line material is not known to be lead, galvanized requiring replacement, or non-lead, such as where there is no documented evidence or evidence reliably supporting material categorization. Water systems may elect to provide more information regarding their unknown service lines as long as the inventory clearly distinguishes unknown service lines from those where the categorization of the material is based on the categorization methods approved under paragraph (b)(2) of this section.

(4) The inventory must include a street address associated with each service line and connector. Where a street address is not available for an individual service line or connector, a unique locational identifier (*e.g.,* block, Global Positioning System or GPS coordinates, intersection, or landmark) may be used.

(5) The inventory must be publicly accessible.

(i) The publicly accessible inventory must include the information described in paragraphs (a)(2) through (4) of this section and be updated in accordance with paragraph (b) of this section.

(ii) Water systems serving greater than 50,000 persons must make the publicly accessible inventory available online.

(6) When a water system has no lead, galvanized requiring replacement, or lead status unknown service lines, no known lead connectors, and no connectors of unknown material, it may comply with the requirements in paragraph (a)(5) of this section using a written statement in lieu of the publicly accessible inventory, declaring that the distribution system has no lead, galvanized requiring replacement, or lead status unknown service lines, no known lead connectors, and no connectors of unknown material. The statement must include a general description of all applicable sources used in the inventory as described in paragraphs (a)(1) and (2) and (b)(2) of this section to make this determination.

(7) Instructions to access the publicly accessible inventory (including inventories consisting only of a statement in accordance with paragraph (a)(6) of this section) must be included in the Consumer Confidence Report in accordance with § 141.153(h)(8)(ii).

(b) *Additional requirements for service line and connector inventory maintenance.* (1) All water systems must update the baseline inventory of service lines and connectors developed in paragraph (a)(2) of this section and submit the updates to the State on an annual basis in accordance with § 141.90(e)(4). These updates begin one year after the compliance date in § 141.80(a)(3). The publicly accessible inventory must reflect any updates no later than the deadline to submit the updated inventory to the State.

(i) All water systems must identify the material of all lead status unknown service lines by the applicable mandatory service line replacement deadline in paragraph (d)(4) of this section.

(ii) Water systems whose inventories contain only non-lead service lines and non-lead connectors or no connectors present are not required to provide updated inventories to the State or updates to the publicly accessible inventory. If, in the future, such a water system discovers a lead service line, galvanized requiring replacement service line, or lead connector within its system, the system must notify the State no later than 60 days after the discovery, prepare an updated inventory in accordance with this section on a schedule established by the State, replace the lead or galvanized requiring replacement service line in accordance with paragraph (d)(4)(ii) of this section, and replace any lead connector along the service line in accordance with paragraph (e) of this section.

(2) Water systems must update the inventory annually with any new information acquired from all applicable sources described in paragraphs (b)(2) through (4) of this section and follow all applicable requirements for the inventory in paragraphs (a) and (b) of this section. The water system may update the inventory using other sources of information not listed in paragraphs (b)(2)(i) through (iii) of this section if the use of those sources is approved or required by the State.

(i) All construction and plumbing codes, permits, and records or other documentation that indicate the service line and connector materials used to connect structures to the distribution system.

(ii) All water system records on service lines and connectors, including distribution system maps and drawings, recent or historical records on each service connection and connector, meter installation records, historical capital improvement or master plans, and standard operating procedures.

(iii) All records of inspections in the distribution system that indicate the material composition of the service connections and connectors that connect a structure to the distribution system.

(iv) Water systems must update their inventory annually based on any lead or galvanized requiring replacement service line replacements, service line material inspections, or lead connector replacements that have been conducted. Each updated inventory and subsequent update to the publicly accessible inventory must include the following information regarding service line material identification and replacement:

(A) The total number of lead service lines in the inventory;

(B) The total number of galvanized requiring replacement service lines in the inventory;

(C) The total number of lead status unknown service lines in the inventory;

(D) The total number of non-lead service lines in the inventory;

(E) The total number of lead connectors in the inventory;

(F) The total number of connectors of unknown material in the inventory;

(G) The total number of full lead service line replacements and full galvanized requiring replacement service line replacements that have been conducted in each preceding program year as defined in paragraph (d)(5)(iii) of this section; and

(H) The total number of partial lead service line replacements and partial galvanized requiring replacement service line replacements that have been conducted in each preceding program year as defined in paragraph (d)(5)(iii) of this section.

(v) Water systems must identify service line material in accordance with paragraph (a)(3) of this section, connector material in accordance with paragraph (a)(2) of this section, and addresses in accordance with paragraph (a)(4) of this section as they are encountered in the course of normal operations (*e.g.,* checking service line materials when reading water meters or performing maintenance activities). Water systems must update the inventory annually based on the identified service line materials, connector materials and addresses.

(3) Water systems that discover a lead or galvanized requiring replacement service line that was previously inventoried as non-lead must update their inventory in accordance with paragraph (b)(2) of this section and, if applicable, paragraph (b)(1)(ii) of this section. Water systems must notify the State in accordance with § 141.90(e) and comply with any additional actions required by the State to address the inventory inaccuracy.

(4) If a consumer or customer (if different from the person served at that service connection) notifies the water system of a suspected incorrect categorization of their service line material in the inventory, the system must respond to the consumer or customer within 30 days of receiving the notification to make an offer to inspect the service line.

(5) All water systems must validate the accuracy of the non-lead service line category in the inventory as follows:

(i) The water system must identify a validation pool consisting of all service lines categorized as ''non-lead,'' but excluding non-lead service lines identified by the following: records showing the service line was installed after June 19, 1988, or after the compliance date of a State or local law prohibiting the use of service lines that do not meet the 1986 definition of lead free in accordance with section 1417 of the Safe Drinking Water Act, as amended in 1986 (Pub. L. 99–339, title I, sec. 109(a), 100 Stat. 651) and 40 CFR 141.43(d)(1) and (2), as codified on July 1, 1991, whichever is earlier; visual inspection of the pipe exterior at a minimum of two points (*e.g.,* excavation, visual inspection in the meter pit or stop box, or visual inspection inside the home); or previously replaced lead or galvanized requiring replacement service lines.

(ii) The water system must confirm the service line material of a random sample (*e.g.,* a sample selected by use of a random number generator or lottery method) of non-lead service lines from the validation pool. Confirmation of service line material must be done by visual inspection of the pipe exterior at a minimum of two points. Where ownership is shared, the water system must conduct at least one visual inspection on each portion of the service line. Where ownership is shared and only one portion of the service line is included in the validation pool, systems must conduct at least one point of visual inspection on the unconfirmed portion of the service line. Water systems must validate at least as many service lines as are required in table 1 to this paragraph (b)(5)(ii).

TABLE 1 TO PARAGRAPH (b)(5)(ii)

Size of validation pool	Number of validations required
<1,500	20 percent of validation pool.
1,500 to 2,000	322.
2,001 to 3,000	341.
3,001 to 4,000	351.
4,001 to 6,000	361.
6,001 to 10,000	371.
10,001 to 50,000	381.
>50,000	384.

(iii) If physical access to private property is necessary to complete the validation and the water system is unable to gain access, the system is not required to conduct a validation at that site. The system must replace the site by randomly selecting a new service line that meets the requirements of paragraph (b)(5)(i) of this section to conduct the validation.

(iv) The deadlines for inventory validation are:

(A) No later than December 31 following seven years after the compliance date in § 141.80(a)(3) for water systems subject to the mandatory service line replacement deadline in paragraph (d)(4) of this section or water systems who have reported only non-lead service lines in their baseline inventory, submitted to the State in accordance with § 141.90(e)(9);

(B) A deadline established by the State for water systems conducting mandatory service line replacement on a shortened deadline for service line replacement as established by the State in accordance with paragraph (d)(5)(v) of this section; or

(C) A deadline established by the State to be no later than three years prior to the deadline for completing mandatory service line replacement if the water system is eligible for and plans to use a deferred deadline under paragraph (d)(5)(vi) of this section or an extended schedule for mandatory service line replacement pursuant to an exemption or a variance.

(v) Water systems that conduct inventory validation pursuant to this paragraph (b)(5) must complete the validation by the applicable deadline described in paragraph (b)(5)(iv) of this section, submit the results of the validation in accordance with § 141.90(e)(9), and comply with any additional actions required by the State to address inventory inaccuracies. The system must submit to the State the specific version (including the date) of the service line inventory that was used to determine the number of non-lead service lines included in the validation pool in accordance with § 141.90(e)(9).

(vi) Water systems may make a written request to the State to approve a waiver of the inventory validation requirements in this paragraph (b). To obtain a waiver, the water system must submit documentation to the State to demonstrate the system has conducted an inventory validation that is at least as stringent as the inventory validation requirements specified in paragraphs (b)(5)(i) through (iii) of this section by the compliance date in § 141.80(a)(3) and obtain written approval of the waiver from the State.

(c) *Service line replacement plan.* All water systems with one or more lead, galvanized requiring replacement, or lead status unknown service lines in their distribution system must create a service line replacement plan by the compliance date in § 141.80(a)(3) and submit a service line replacement plan to the State in accordance with § 141.90(e). The service line replacement plan must be sufficiently detailed to ensure a system is able to comply with the service line inventory and replacement requirements in this section.

(1) The service line replacement plan must include a description of:

(i) A strategy for determining the material composition of lead status unknown service lines in the service line inventory under paragraph (a) of this section;

(ii) A standard operating procedure for conducting full service line replacement (*e.g.,* techniques to replace service lines);

(iii) A communication strategy to inform consumers (*i.e.,* persons served at the service connection) and customers before a full or partial lead or galvanized requiring replacement service line replacement consistent with the requirements for notification and mitigation in paragraph (h) of this section;

(iv) A procedure for consumers and customers to flush service lines and premise plumbing of particulate lead following disturbance of a lead, galvanized requiring replacement, or lead status unknown service line in accordance with § 141.85(f) and following full or partial replacement of a lead or galvanized requiring replacement service line consistent with the requirements for notification and mitigation in paragraph (h) of this section;

(v) A strategy to prioritize service line replacement based on factors including, but not limited to, known lead and galvanized requiring replacement service lines and community-specific factors, such as populations disproportionately impacted by lead and populations most sensitive to the effects of lead;

(vi) A funding strategy for conducting service line replacement. Where the water system intends to charge customers for the cost to replace all or a portion of the service line because it is authorized or required to do so under State or local law or water tariff agreement, the funding strategy must include a description of whether and how the water system intends to assist customers who are unable to pay to replace the portion of the service line they own;

(vii) A communication strategy to inform residential and non-residential customers and consumers (*e.g.,* property owners, renters, and tenants) served by the water system about the service line replacement plan and program; and

(viii) Identification of any laws, regulations, and/or water tariff agreements that affect the water system's ability to gain access to conduct full lead and galvanized requiring replacement service line replacement, including the citation to the specific laws, regulations, or water tariff agreement provisions. This includes identification of any laws, regulations, and/or water tariff agreements that require customer consent and/or require or authorize customer cost-sharing.

(ix) For any water system that identifies any lead-lined galvanized service lines in the service line inventory as described in paragraphs (a) and (b) of this section, a strategy to determine the extent of the use of lead-lined galvanized service lines in the distribution system and categorize any lead-lined galvanized service lines as lead pursuant to table 2 to paragraph (d)(6)(iii)(A) of this section.

(x) For any water system that is eligible for and plans to use a deferred deadline pursuant to paragraph (d)(5)(vi) of this section:

(A) Documentation to support the system's determination that it is eligible for a deferred deadline, showing that 10 percent of the total number of known lead and galvanized requiring replacement service lines in the replacement pool exceeds 39 annual replacements per 1,000 service connections as calculated in paragraph (d)(5)(vi)(A) of this section;

(B) Identification of the deferred deadline and the associated cumulative average replacement rate that the system considers to be the fastest feasible but no slower than a deadline and replacement rate corresponding to 39 annual replacements per 1,000 service connections as calculated in paragraph (d)(5)(vi)(A) of this section, as well as the annual number of replacements required, the length of time (in years and months), and the date of completion for this deadline and rate; and

(C) Information supporting the system's determination that replacing lead and galvanized requiring replacement service lines by an earlier date and faster rate than provided under the deferred deadline provision in paragraph (d)(5)(vi) of this section is not feasible.

(2) The service line replacement plan must be made accessible to the public. Water systems serving greater than 50,000 persons must make the plan available to the public online.

(3) Water systems must annually update the service line replacement plan to include any new or updated information and submit the updates to the State on an annual basis in accordance with § 141.90(e). The water system must make the updated plan publicly accessible no later than the deadline to submit the updated plan to the State.

(i) If there is no new or updated information to include in the service line replacement plan since the previous iteration, the water system may certify to the State that the plan has no updates in lieu of resubmitting the plan unless the system is replacing service lines in accordance with a deferred deadline and paragraph (c)(3)(ii) of this section applies.

(ii) If there is no new or updated information to include in the service line replacement plan and the water system is replacing service lines in accordance with a deferred deadline pursuant to paragraph (d)(5)(vi) of this section, every three years after the initial submission of the plan, the system must update the information specified in paragraph (c)(1)(x) of this section to support why the system continues to need the deferred deadline and resubmit the plan to the State.

(iii) If there are no longer lead, galvanized requiring replacement, and unknown service lines in the inventory as described in paragraphs (a) and (b) of this section, water systems are not required to resubmit the service line replacement plan or certify to the State that the plan has no updates.

(d) *Mandatory full service line replacement.* (1) All water systems must replace all lead and galvanized requiring replacement service lines under the control of the water system unless the replacement would leave in place a partial lead service line.

(2) Where a water system has access (*e.g.,* legal access, physical access) to conduct full service line replacement, the service line is under its control, and the water system must replace the service line. Where a water system does not have access to conduct full service line replacement, the water system is not required by this subpart to replace the line, but the water system must document the reasons that the water system does not have access and include any specific laws, regulations, and/or water tariff agreements that affect the water system's ability to gain access to conduct full replacement of lead and galvanized requiring replacement service lines. The water system must provide this documentation to the State pursuant to § 141.90(e)(10).

(i) This subpart does not establish the criteria for determining whether a system has access to conduct full service line replacement. Any applicable State or local laws or water tariff agreement requirements to gain access to conduct full service line replacement must be identified in the service line replacement plan as described in paragraph (c) of this section.

(ii) [Reserved]

(3) Where a water system has legal access to conduct full service line replacement only if property owner consent is obtained, the water system must make a ''reasonable effort'' to obtain property owner consent. If such a water system does not obtain consent

after making a ''reasonable effort'' to obtain it from any property owner, then the water system is not required by this subpart to replace any portion of the service line at that address unless there is a change in ownership of the property as described in paragraph (d)(3)(ii) of this section. The water system must provide documentation of the reasonable effort to the State pursuant to § 141.90(e)(10).

(i) A ''reasonable effort'' must include at least four attempts to engage the property owner using at least two different methods of communication (*e.g.,* in-person conversation, phone call, text message, email, written letter, postcard, or information left at the door such as a door hanger) before the applicable deadline of mandatory service line replacement as described in paragraph (d)(4) of this section. The State may require systems to conduct additional attempts and may require specific outreach methods to be used.

(ii) Within six months of any change in ownership of the property, the water system must offer full service line replacement to any new property owner. Systems may use new service initiation or service transfer to a new customer to identify when there is a change in ownership. Within one year of any change in ownership of the property, the system must make a ''reasonable effort'' to obtain the property owner's consent as described in paragraph (d)(3)(i) of this section. If the water system is unable to obtain consent from the current property owner after making a ''reasonable effort'' to obtain it, the water system is not required under this subpart to replace the line. This paragraph (d)(3)(ii) continues to apply until all lead and galvanized requiring replacement service lines are replaced.

(4) The deadline for water systems to replace all lead and galvanized requiring replacement service lines under the control of the water system is no later than 10 program years after the compliance date specified in § 141.80(a)(3) unless the system is subject to a different deadline under paragraphs (d)(5)(v) and (vi) of this section.

(i) Water systems must start mandatory service line replacement programs no later than the compliance date specified in § 141.80(a)(3).

(ii) If a lead or galvanized requiring replacement service line is discovered when the system's inventory is comprised of only non-lead service lines, the system must complete the following requirements:

(A) Update the replacement pool calculated under paragraph (d)(6)(i) of this section.

(B) Conduct a full service line replacement of the affected service line as soon as practicable but no later than 180 days after the date the service line is discovered. Where a system determines that it is not practicable to conduct full service line replacement within 180 days after the date of discovery (*e.g.,* due to freezing ground conditions), the system may request State approval for an extension of no later than one year after the date the service line was discovered to replace the affected service line. The request for an extension must be made no later than 90 days after the date of discovery of the affected service line.

(5) Water systems must meet a minimum cumulative average annual replacement rate for completing mandatory service line replacement in accordance with this paragraph (d)(5):

(i) *Annual replacement rate.* A water system must replace lead and galvanized requiring replacement service lines as described in paragraph (d)(6) of this section at an average annual replacement rate of at least 10 percent calculated across a cumulative period unless the system is subject to a shortened replacement rate or eligible for a deferred replacement rate in accordance with paragraphs (d)(5)(v) and (vi) of this section.

(ii) *Cumulative percent of service lines replaced.* To calculate the cumulative percent of service lines replaced, at the end of each mandatory service line replacement ''program year'' as specified in paragraph (d)(5)(iii) of this section, water systems must divide the total number of lead and galvanized requiring replacement service lines replaced thus far in the program in accordance with paragraph (d)(6)(iii) of this section by the number of service lines within the replacement pool in accordance with paragraph (d)(6)(i) of this section.

(iii) *Program year.* The first mandatory service line replacement ''program year'' is from the compliance date specified in § 141.80(a)(3) to the end of the next calendar year. Every program year thereafter is on a calendar year basis. This paragraph (d)(5)(iii) applies for the purposes of this section.

(iv) *Cumulative average replacement rate.* The annual replacement rate in paragraph (d)(5)(i) of this section is assessed annually as a cumulative average. The first cumulative average replacement rate must be assessed at the end of the third program year and is calculated by dividing the cumulative percent of service lines replaced in accordance with paragraph (d)(5)(ii) of this section by the number of completed program years (or three in this case). Annually thereafter, at the end of each program year, systems must assess the cumulative average replacement rate by dividing the most recent cumulative percent of service lines replaced in accordance with paragraph (d)(5)(ii) by the number of completed program years. Except as provided in paragraph (d)(5)(iv)(A) of this section, the cumulative average replacement rate must be 10 percent or greater each program year, and the water system must replace all lead and galvanized requiring replacement service lines under its control by the applicable deadline for completing mandatory service line replacement in accordance with paragraph (d)(4) of this section.

(A) A water system is not required by this section to meet the cumulative average replacement rate described in this paragraph (d)(5) where, after the compliance date specified in § 141.80(a)(3), the system has replaced all lead and galvanized requiring replacement service lines in the replacement pool as described in paragraph (d)(6)(i) of this section that are under the control of the system, identified all unknown service lines in the inventory, and documented and submitted to the State the reasons the system currently does not have access to conduct full replacement of the remaining lead and galvanized requiring replacement service lines in the replacement pool in accordance with paragraphs (d)(2) and (3) of this section. When lead and galvanized requiring replacement service lines come under the control of the system, the water system is required to replace the service lines as described in this paragraph (d). This paragraph (d)(5)(iv)(A) continues to apply until all lead and galvanized requiring replacement service lines are replaced.

(B) [Reserved]

(v) *Shortened deadline and associated replacement rate.* Where the State determines that a shortened replacement deadline is feasible for a water system (*e.g.,* by considering the number of lead and galvanized requiring replacement service lines in a system's inventory), the system must replace service lines by the State-determined deadline and by a faster minimum replacement rate in accordance with paragraph (d)(5)(v)(A) of this section. The State must make this determination in writing and notify the system of its finding. The State must set a shortened deadline at any time throughout a system's replacement program if a State determines a shorter deadline is feasible. This paragraph (d)(5)(v) also applies to systems eligible for a deferred

deadline as specified in paragraph (d)(5)(vi) of this section.

(A) Systems must replace lead and galvanized requiring replacement service lines at an average annual replacement rate calculated by dividing 100 by the number of years needed to meet the shortened deadline determined by the State, expressed as a percentage. Systems must comply with the cumulative average replacement rate in accordance with paragraph (d)(5)(iv) of this section, where the first cumulative average replacement rate is assessed at the end of the program year that is at least one year after the shortened deadline determination, as determined by the State, unless the shortened replacement deadline is less than three years. If the system's shortened replacement deadline is less than three years, the cumulative average replacement rate must be assessed on a schedule determined by the State.

(B) [Reserved]

(vi) *Deferred deadlines and associated replacement rates.* A water system may defer service line replacement past the deadline in paragraph (d)(4) of this section if the system meets the following criteria:

(A) If a water system replacing 10 percent of the total number of known lead and galvanized requiring replacement service lines in a system's replacement pool results in an annual number of service line replacements by the water system that exceeds 39 per 1,000 service connections, the system may complete replacement of all lead and galvanized requiring replacement service lines by a deadline that corresponds to the system conducting 39 annual replacements per 1,000 service connections at a cumulative average replacement rate assessed in accordance with paragraph (d)(5)(iv) of this section. This paragraph (d)(5)(vi)(A) is also applicable if a water system with service lines newly under their control, after previously not having control as described in paragraph (d)(5)(iv)(A) of this section, is required to conduct more than 39 annual replacements per 1,000 service connections. The number of annual replacements corresponding to 39 annual replacements per 1,000 service connections can be calculated by multiplying the number of service connections in a system by 0.039. The number of years needed to complete replacement is the total number of known lead and galvanized requiring replacement service lines in a system's replacement pool divided by the calculated number of annual replacements. To calculate the minimum cumulative average replacement rate, the system must divide 100 by the number of years needed to achieve replacing 39 annual replacements per 1,000 service connections, expressed as a percentage.

(B) Any water system that is eligible for and plans to use a deferred deadline must include information, in accordance with paragraph (c)(1)(x) of this section, to support the use of a deferred deadline including identifying the deadline and associated cumulative average rate of replacement to meet this deferred deadline in the system's initial service line replacement plan and subsequent updates to the plan in accordance with paragraph (c) of this section. The system must identify an annual replacement rate that is no less than 39 annual replacements per 1,000 service connections.

(C) As soon as practicable, but no later than the end of the second program year as defined in paragraph (d)(5)(iii) of this section, and every three years thereafter, the State must determine in writing whether the deferred deadline and associated cumulative average replacement rate the system documented in paragraph (c)(1)(x)(B) of this section are the fastest feasible to conduct mandatory service line replacement and either approve the continued use of this deferred deadline and replacement rate as the fastest feasible for the system, or set a shorter deferred deadline and identify an associated replacement rate to ensure the system is replacing service lines at the fastest feasible rate for the system. The State must consider information that includes, but is not limited to, the system's submissions of the service line inventory and replacement plan in accordance with paragraph (a) through (c) of this section and information collected from other water systems conducting mandatory service line replacement. The State may require the system to provide additional information for the State to consider in its assessment of the continued use of a deferred deadline and the fastest feasible replacement rate.

(D) In the first two program years, the system must comply with the annual replacement rate identified in its initial replacement plan (unless the State determines a faster rate is feasible sooner). In subsequent program years, the system must comply with the applicable deferred deadline and associated replacement rate identified in the State's written determination of the deadline and replacement rate in paragraph (d)(5)(vi)(C) of this section.

(6) Calculation of the replacement pool, the annual number of replacements required, and the number of service lines replaced each year to calculate a system's cumulative average replacement rate described in paragraph (d)(5) of this section are as follows:

(i) *Replacement pool.* To calculate the replacement pool, systems must add the total number of lead, galvanized requiring replacement, and lead status unknown service lines in the baseline inventory submitted by the compliance date specified in § 141.80(a)(3). The water system must not subtract lead or galvanized requiring replacement service lines from the replacement pool when they are replaced. The water system must not subtract service lines that are not under the control of the system from the replacement pool. At the beginning of each program year, water systems must update the replacement pool according to the counts of specific types of recategorized service lines in the inventory annually thereafter as described in this paragraph (d)(6)(i):

(A) Unknown service lines that are identified as non-lead service lines must be subtracted from the replacement pool. Unknown service lines that are identified as lead or galvanized requiring replacement service lines must be recategorized appropriately in the inventory and replacement pool, but they do not change the number of service lines in the replacement pool because recategorization does not remove these service lines from the replacement pool.

(B) Non-lead service lines discovered to be lead or galvanized requiring replacement service lines must be added to the replacement pool.

(C) Lead or galvanized requiring replacement service lines discovered to be non-lead service lines must be subtracted from the replacement pool.

(D) Each entire service line must count only once for purposes of calculating the replacement pool.

(ii) *Annual number of replacements required.* To calculate the number of lead and galvanized requiring replacement service lines a system is required to replace in a given program year, divide the number of service lines in the most up-to-date replacement pool, calculated at the beginning of each program year, by the total number of years remaining under paragraph (d)(4) of this section to complete mandatory service line replacement (*e.g.,* 10 years).

(iii) *Number of service lines replaced.* When calculating the cumulative average replacement rate, the water system may only include full service line replacements of lead or galvanized requiring replacement service lines when counting the number of service lines replaced. Wherever the system conducts a replacement of a lead or

galvanized requiring replacement service line (either a portion of a service line or the entire service line), the replacement counts as a full service line replacement only if, after the replacement, the entire service line can be categorized in the inventory as non-lead under paragraph (a)(3)(iii) of this section.

(A) For purposes of mandatory service line replacement, systems must count each entire service line once, including where ownership of the service line is shared, with a single material categorization in accordance with table 2 to this paragraph (d)(6)(iii)(A).

TABLE 2 TO PARAGRAPH (d)(6)(iii)(A)

System-owned portion	Customer-owned portion	Categorization for entire service line
Lead	Lead	Lead.
Lead	Galvanized Requiring Replacement	Lead.
Lead	Non-lead	Lead.
Lead	Lead Status Unknown	Lead.
Non-lead	Lead	Lead.
Non-lead and never previously lead	Non-lead, specifically galvanized pipe material	Non-lead.
Non-lead	Non-lead, material other than galvanized pipe material.	Non-lead.
Non-lead	Lead Status Unknown	Lead Status Unknown.
Non-lead, but system is unable to demonstrate it was not previously Lead.	Galvanized Requiring Replacement	Galvanized Requiring Replacement.
Lead Status Unknown	Lead	Lead.
Lead Status Unknown	Galvanized Requiring Replacement	Galvanized Requiring Replacement.
Lead Status Unknown	Non-lead	Lead Status Unknown.
Lead Status Unknown	Lead Status Unknown	Lead Status Unknown.

(B) A full service line replacement is counted where a non-lead service line is installed for use and the lead or galvanized requiring replacement service line is disconnected from the water main or other service line. If the lead or galvanized requiring replacement service line is disconnected from the water main or system-owned portion of the service line but not removed, the water system must be subject to a State or local law or have a written policy to preclude the water system from reconnecting the lead or galvanized requiring replacement service line to the water main or other service line.

(C) A full service line replacement may be counted where a system physically disconnects a service line that is not in use and the water system does not install a new non-lead service line because there is no service line in use (*e.g.,* at an abandoned property). If the disconnected lead or galvanized requiring replacement service line is not removed, the water system must be subject to a State or local law or have a written policy to preclude the water system from reconnecting the disconnected service line (*i.e.,* a new non-lead service line must be installed if active use is to resume).

(D) Water systems must not count the following as a full service line replacement for purposes of this subpart:

(*1*) Where the service line is partially replaced as defined in § 141.2.

(*2*) Where a lead, galvanized requiring replacement, or unknown service line is determined to be a non-lead service line.

(*3*) Where only a lead connector is replaced.

(*4*) Where pipe lining or coating technologies are used while the lead or galvanized requiring replacement service line remains in use.

(*5*) Where a water system does not replace a lead or galvanized requiring replacement service line because it is not be under the control of the system as described in paragraph (d)(2) of this section.

(e) *Replacement of lead connectors when encountered by a water system.* (1) The water system must replace any lead connector when encountered during planned or unplanned water system infrastructure work unless the connector is not under the control of the system (*e.g.,* where the system does not have and cannot obtain access to conduct the connector replacement).

(i) Upon replacement of any connector that is attached to a lead or galvanized requiring replacement service line, the water system must follow risk mitigation measures for disturbances as specified in § 141.85(f)(2).

(ii) Following replacement of a lead connector, the water system must update the information on the connector material and location in its inventory in accordance with paragraphs (a)(2)(ii) and (b)(2) of this section.

(2) The water system must comply with any State or local laws that require additional connectors to be replaced.

(f) *Replacement of a service line prompted by the customer.* If State or local laws or water tariff agreements do not prevent customers from conducting partial lead or galvanized requiring replacement service line replacements (''customer-initiated replacements''), the water system must meet the following requirements:

(1) If the water system is notified by the customer that the customer intends to conduct a partial lead or galvanized requiring replacement service line replacement, the water system must:

(i) Replace the remaining portion of the lead or galvanized requiring replacement service line at the same time as, or as soon as practicable after, the customer-initiated replacement, but no later than 45 days from the date the customer conducted the partial replacement;

(ii) Provide notification and risk mitigation measures in accordance with paragraph (h) of this section, as applicable, before the affected service line is returned to service; and

(iii) Notify the State within 30 days if it cannot meet the deadline in paragraph (f)(1)(i) of this section and complete the replacement no later than 180 days from the date the customer conducted the partial replacement.

(2) If the water system is notified or otherwise learns that a customer-initiated replacement occurred within the previous six months and left in place the system-owned portion of a lead or galvanized requiring replacement service line, the water system must:

(i) Replace any remaining portion of the affected service line within 45 days

from the day of becoming aware of the customer-initiated replacement; and

(ii) Provide notification and risk mitigation measures in accordance with paragraph (h) of this section within 24 hours of becoming aware of the customer replacement.

(iii) Notify the State within 30 days if it cannot meet the deadline in paragraph (f)(2)(i) of this section and complete the replacement no later than 180 days of the date the system learns of the customer-initiated replacement.

(3) When a water system is notified or otherwise learns of a customer-initiated replacement of a lead or galvanized requiring replacement service line that occurred more than six months in the past, this section does not require the water system to complete the lead or galvanized requiring replacement service line replacement of the system-owned portion under this paragraph (f). However, the remaining portion of the lead or galvanized requiring replacement service line must be identified in the inventory in accordance with paragraph (b) of this section and replaced in accordance with paragraph (d) of this section.

(g) *Requirements for conducting partial service line replacements.* This paragraph (g) prohibits water systems from conducting a partial lead service line replacement or a partial galvanized requiring replacement service line replacement as defined under § 141.2 unless it is conducted as part of an emergency repair or in coordination with planned infrastructure work that impacts service lines, excluding planned infrastructure work solely for the purposes of lead or galvanized requiring replacement service line replacement. Where a water system has access to conduct full service line replacement as specified in paragraph (d)(2) of this section, the water system must fully replace the service line. Where a water system conducts partial service line replacement, the system must comply with the notification and mitigation requirements specified in paragraphs (h)(1) and (2) of this section.

(1) Whenever a water system conducts a partial replacement of a lead or galvanized requiring replacement service line, the system must include a dielectric coupling separating the remaining service line and the replaced service line (*i.e.,* newly installed service line) to prevent galvanic corrosion unless the replaced service line is made of plastic.

(2) [Reserved]

(h) *Protocols for notification and mitigation for partial and full service line replacements*—(1) *Notification and mitigation requirements for planned partial service line replacement.* Whenever a water system plans to partially replace a lead or galvanized requiring replacement service line in coordination with planned infrastructure work that impacts service lines, the water system must provide written notice to the property owner, or the owner's authorized agent, as well as non-owner occupant(s) served by the affected service line at least 45 days prior to the replacement. Where a water system has access to conduct full service line replacement only if property owner consent is obtained, the water system must make a reasonable effort to obtain property owner consent to replace the remaining portion of the service line in accordance with paragraph (d)(3)(i) of this section. The reasonable effort must be completed before the partial lead service line replacement.

(i) Before the affected service line is returned to service, the water system must provide written notification that explains that consumers may experience a temporary increase of lead levels in their drinking water due to the replacement and that meets the content requirements of § 141.85(a)(1)(ii) through (iv) and contact information for the water system. In instances where multi-family dwellings or multiple non-residential occupants are served by the affected service line to be partially replaced, the water system may elect to post the information at a conspicuous location instead of providing individual written notification to all residents or non-residential occupants.

(ii) Before the affected service line is returned to service, the water system must provide written information about a procedure for consumers to flush service lines and premise plumbing of particulate lead following partial replacement of a lead or galvanized requiring replacement service line.

(iii) Before the affected service line is returned to service, the water system must provide the consumer with a pitcher filter or point-of-use device certified by an American National Standards Institute accredited certifier to reduce lead, six months of replacement cartridges, and instructions for use. If the affected service line serves more than one residence or non-residential unit (*e.g.,* a multi-unit building), the water system must provide a pitcher filter or point-of-use device, six months of replacement cartridges and use instructions to every residential and non-residential unit in the building.

(iv) The water system must offer to the consumer to collect a follow up tap sample between three months and six months after the completion of any partial replacement of a lead service line. The tap sample must be a first- and fifth-liter paired sample after at least six hours of stagnation, following the tap sampling protocol under § 141.86(b). The water system must provide the results of the sample to the persons served by the service line in accordance with § 141.85(d).

(2) *Notification and mitigation requirements for emergency partial service line replacement.* Any water system that creates a partial replacement of a lead or galvanized requiring replacement service line due to an emergency repair must provide notice and risk mitigation measures to the persons served by the affected service line in accordance with paragraphs (h)(1)(i) through (iv) of this section before the affected service line is returned to service. The water system must offer to the property owner, or the owner's authorized agent, to replace the partial service line created by the emergency repair within 45 days.

(3) *Notification and mitigation requirements for full service line replacement.* Any water system that conducts a full lead or galvanized requiring replacement service line replacement must provide written notice to the persons served by the affected service line before the affected service line is returned to service; written notice must be provided to the owner or the owner's authorized agent, no later than 30 days following completion of the replacement.

(i) The written notification must explain that consumers may experience a temporary increase of lead levels in their drinking water due to the replacement and must meet the content requirements of § 141.85(a)(1)(ii) through (iv) as well as contact information for the water system. In instances where multi-family dwellings or multiple non-residential occupants are served by the lead or galvanized requiring replacement service line to be replaced, the water system may elect to post the information at a conspicuous location instead of providing individual written notification to all persons served in residential and non-residential units.

(ii) Before the replaced service line is returned to service, the water system must provide written information about a procedure for consumers to flush service lines and premise plumbing of particulate lead following full replacement of a lead or galvanized requiring replacement service line.

(iii) Before the replaced service line is returned to service, the water system must provide the consumer with a pitcher filter or point-of-use device

certified by an American National Standards Institute accredited certifier to reduce lead, six months of replacement cartridges, and instructions for use. If the lead service line serves more than one residence or non-residential unit (*e.g.,* a multi-unit building), the water system must provide a pitcher filter or point-of-use device, six months of replacement cartridges and instructions for use to every residential and non-residential unit in the building.

(iv) The water system must offer to the consumer to collect a follow up tap sample between three months and six months after completion of any full replacement of a lead or galvanized requiring replacement service line. The tap sample must be a first-liter sample after at least six hours of stagnation, following the tap sampling protocol under § 141.86(b). The water system must provide the results of the sample to the consumer in accordance with § 141.85(d).

(i) *Reporting to demonstrate compliance to the State.* To demonstrate compliance with paragraphs (a) through (h) of this section, a water system must report to the State the information specified in § 141.90(e).

■ 9. Revise and republish § 141.85 to read as follows:

§ 141.85 Public education and supplemental monitoring and mitigation requirements.

A water system that exceeds the lead action level based on tap water samples collected in accordance with § 141.86 must distribute the public education materials contained in paragraph (a) of this section in accordance with the delivery requirements in paragraph (b) of this section. Water systems that exceed the lead action level must offer to sample the tap water of any person served by the water system who requests it in accordance with paragraph (c) of this section. Water systems must offer to sample for lead in the tap water of any person served by a lead, galvanized requiring replacement, or lead status unknown service line who requests it in accordance with paragraph (c) of this section. All water systems must deliver a consumer notice of lead tap water monitoring results and copper tap water monitoring results to persons served by the water system at sites that are sampled, as specified in paragraph (d) of this section. A water system with lead, galvanized requiring replacement, or lead status unknown service lines must deliver public education materials to persons with a lead, galvanized requiring replacement, or lead status unknown service line as specified in paragraphs (e) and (f) of this section. All community water systems that do not meet the minimum replacement rate for mandatory service line replacement as required under § 141.84(d) must conduct outreach activities as specified in paragraph (h) of this section. All community water systems must conduct annual outreach to local and State health agencies as outlined in paragraph (i) of this section. Water systems with multiple lead action level exceedances, as specified in paragraph (j)(1) of this section, must conduct public outreach and make filters certified to reduce lead available as specified in paragraphs (j)(2) through (6) of this section. For water systems serving a large proportion of consumers with limited English proficiency, as determined by the State, all public education materials required under this section must comply with the language requirements in paragraph (b)(1) of this section.

(a) *Content of written public education materials*—(1) *Community water systems and non-transient non-community water systems.* Water systems must include the following elements in written materials (*e.g.,* printed or digital brochures and pamphlets) in the same order as listed in paragraphs (a)(1)(i) through (vii) of this section. In addition, language in paragraphs (a)(1)(i), (ii), and (vii) of this section must be included in the materials, exactly as written, except for the text in brackets for which the water system must include system-specific information. States may approve changes to the content requirements if the State determines the changes are more protective of human health. Any additional information presented by a water system must be consistent with the information in paragraphs (a)(1)(i) through (vii) of this section and be in plain language that can be understood by the general public. Water systems must submit a copy of all written public education materials to the State prior to delivery. The State may require the system to obtain approval of the content of written public education materials prior to delivery.

(i) *Important information about lead in your drinking water.*

Figure 1 to Paragraph (a)(1)(i)

Important Information About Lead in Your Drinking Water

[INSERT NAME OF WATER SYSTEM] found elevated levels of lead in drinking water in some homes/buildings. Lead can cause serious health problems, especially for pregnant people and young children. Please read this information closely to see what you can do to reduce lead in your drinking water.

(ii) *Health effects of lead.*

Figure 2 to Paragraph (a)(1)(ii)

There is no safe level of lead in drinking water. Exposure to lead in drinking water can cause serious health effects in all age groups, especially pregnant people, infants (both formula-fed and breastfed), and young children. Some of the health effects to infants and children include decreases in IQ and attention span. Lead exposure can also result in new or worsened learning and behavior problems. The children of persons who are exposed to lead before or during pregnancy may be at increased risk of these harmful health effects. Adults have increased risks of heart disease, high blood pressure, kidney or nervous system problems. Contact your health care provider for more information about your risks.

(iii) *Sources of lead.* (A) Explain what lead is.

(B) Explain possible sources of lead in drinking water and how lead enters drinking water. Include information on home/building plumbing materials, service lines, and connectors that may contain lead and include information about the definition of lead free as provided in Safe Drinking Water Act section 1417 of 1986 and as subsequently revised in 2011. Explain that lead levels may vary and therefore lead exposure is possible even when tap sampling results do not detect lead at one point in time.

(C) Discuss other important sources of lead exposure in addition to drinking water (*e.g.,* paint).

(iv) *Consumer steps to reduce lead exposure.* Discuss the steps the consumer can take to reduce their exposure to lead in drinking water.

(A) Explain that using a filter, certified by an American National Standards Institute accredited certifier to reduce lead, is effective in reducing lead exposures. If the system makes filters available in accordance with paragraph (j)(2) of this section, also include information on how the consumer can obtain a filter.

(B) Encourage running the water to flush out the lead. Explain that lead levels increase over time as water sits in lead-containing plumbing materials and regular water usage in the building can reduce lead levels in drinking water. Advise consumers served by lead and galvanized requiring replacement service lines that they may need to flush the water for longer periods.

(C) Explain concerns with using hot water from the tap and specifically

caution against the use of hot water for preparing baby formula.

(D) Explain that boiling water does not reduce lead levels.

(E) Encourage regular cleaning of faucet aerators.

(F) Discuss other steps consumers can take to reduce exposure to lead in drinking water, especially for pregnant persons, infants, and young children, such as using alternative sources of water.

(G) Suggest that parents have their child's blood tested for lead. Provide contact information for the State and/or local health department.

(H) Tell consumers how to get their water tested, including information in accordance with paragraph (c) of this section.

(v) *Levels of lead in drinking water.* Explain why there are elevated levels of lead in the system's drinking water (if known) and what the water system is doing to reduce the lead levels in homes/buildings in this area.

(vi) *Information on lead, galvanized requiring replacement, and unknown service lines.* For systems with lead, galvanized requiring replacement, or lead status unknown service lines in the system's inventory pursuant to § 141.84(a) and (b), public education materials must meet the requirements of paragraphs (a)(1)(vi)(A) through (G) of this section. For systems with lead connectors or connectors of unknown material in the system's inventory pursuant to § 141.84(a) and (b), public education materials must meet the requirements of paragraph (a)(1)(vi)(C) of this section:

(A) Discuss opportunities to replace lead and galvanized requiring replacement service lines;

(B) Discuss opportunities to have the material of a lead status unknown service line identified;

(C) Include information on how to obtain a copy of the service line inventory or view the inventory on the internet if the system is required to make the inventory available online so the consumer can find out if they are served by a lead, galvanized requiring replacement, or lead status unknown service line, or known lead connector or connector of unknown material;

(D) Include information on how to obtain a copy of the service line replacement plan or view the plan on the internet if the system is required to make the service line replacement plan available online;

(E) Include information about opportunities to replace lead and galvanized requiring replacement service lines. Where the water system intends for customer payment for a portion of the replacement where it is required or authorized by State or local law or a water tariff agreement, the notice must include information about programs that provide financing solutions to assist property owners with replacement of their portion of a lead or galvanized requiring replacement service line;

(F) Include a statement that the water system is required to replace its portion of a lead or galvanized requiring replacement service line when the property owner notifies the water system that they are replacing their portion of the lead or galvanized requiring replacement service line; and

(G) Include a statement that provides instructions for the customer or consumer to notify the water system if they disagree with the service line material categorization in the inventory.

(vii) *More information about lead.*

Figure 3 to Paragraph (a)(1)(vii)

For more information, contact [INSERT NAME OF WATER SYSTEM] at [INSERT WATER SYSTEM PHONE NUMBER OR EMAIL ADDRESS] [(IF APPLICABLE), or visit our website at [INSERT WATER SYSTEM WEBSITE]. For more information on reducing lead exposure around your home/building and the health effects of lead, visit EPA's website at *https://www.epa.gov/lead* or contact your health care provider.

(2) [Reserved]

(b) *Timing, format, and delivery method of public education materials.* (1) For water systems serving a large proportion of consumers with limited English proficiency, as determined by the State, all public education materials required under this section must contain information in the appropriate language(s) regarding the importance of the materials and either contain information on where such consumers may obtain a translated copy of the public education materials, or assistance in the appropriate language(s), or the materials must be in the appropriate language(s).

(2) Each time a community water system exceeds the lead action level based on tap water samples collected in accordance with § 141.86, the system must conduct the public education tasks under this paragraph (b)(2) within 60 days after the end of the tap sampling period in which the exceedance occurred. For community water systems that are on standard monitoring, the end of the tap sampling period is June 30 or December 31. For community water systems that are required to conduct monitoring annually or less frequently, the end of the tap sampling period is September 30 of the calendar year in which the sampling occurs, or, if the State has established an alternate four-month tap sampling period, the last day of that period.

(i) Deliver written materials meeting the content requirements of paragraph (a) of this section to each customer receiving a bill and to other service connections to which water is delivered by the water system. In the case of multi-family dwellings, the water system must deliver the written materials to each unit or post the information at a conspicuous location.

(ii)(A) Contact consumers who are most at risk by delivering education materials that meet the content requirements of paragraph (a) of this section to local public health agencies even if they are not located within the water system's service area, along with an informational notice that encourages distribution to all of the agencies' potentially affected customers or community water system's users. The water system must contact the local public health agencies directly by phone, email, or in person. If local public health agencies provide a specific list of additional community-based organizations serving populations at greatest risk from lead exposure (*e.g.,* pregnant people, children), including organizations outside the service area of the water system, then the system must deliver education materials that meet the content requirements of paragraph (a) to all organizations on the provided lists.

(B) Contact consumers who are most at risk by delivering materials that meet the content requirements of paragraph (a) of this section to the following organizations listed in paragraphs (b)(2)(ii)(B)(*1*) through (*7*) of this section that are located within the water system's service area, along with an informational notice that encourages distribution to all the organization's potentially affected customers or community water system's users:

(*1*) Schools, child care facilities, and school boards.

(*2*) Women, Infants and Children (WIC) and Head Start programs.

(*3*) Public and private hospitals and medical clinics.

(*4*) Pediatricians.

(*5*) Family planning clinics.

(*6*) Local welfare agencies.

(*7*) Obstetricians-gynecologists and midwives.

(iii) No less often than quarterly, provide information with each water bill as long as the system exceeds the action level for lead. The message on the water bill must include the statement in figure 4 to this paragraph (b)(2)(iii)

exactly as written except for the text in brackets for which the water system must include system-specific information. The message or delivery mechanism can be modified in consultation with the State; specifically, the State may allow a separate mailing of public education materials to customers if the water system cannot place the information on water bills.

Figure 4 to Paragraph (b)(2)(iii)

[INSERT NAME OF WATER SYSTEM] found elevated levels of lead in drinking water in some homes/buildings. Lead can cause serious health problems. For more information please contact [INSERT NAME OF WATER SYSTEM] [or visit (INSERT WATER SYSTEM WEBSITE)].

(iv) Post material meeting the content requirements of paragraph (a) of this section on the water system's website if the system serves a population greater than 50,000. The system must retain material on the website for as long as the system exceeds the action level.

(v) Submit a press release to media outlets including newspaper, television, and radio stations. The submitted press release must state the water system found elevated levels of lead in drinking water in some homes/buildings and meet the content requirements of paragraph (a) of this section.

(vi) Implement at least three additional activities from one or more categories listed in paragraphs (b)(2)(vi)(A) through (J) of this section. The educational content and selection of these activities must be determined in consultation with the State.

(A) Public service announcements.

(B) Paid advertisements.

(C) Public area information displays.

(D) Emails to customers.

(E) Public meetings.

(F) Household deliveries.

(G) Targeted individual customer contact.

(H) Direct material distribution to all multi-family homes and institutions.

(I) Contact organizations representing plumbers and contractors to provide information about lead in drinking water, sources of lead, and the importance of using lead free plumbing materials.

(J) Other methods approved by the State.

(vii) [Reserved]

(3) A community water system must repeat the activities in paragraph (b)(2) of this section until the system is at or below the lead action level based on tap water samples collected in accordance with § 141.86. These repeated activities must be completed within 60 days of the end of each tap sampling period. A calculated 90th percentile level at or below the lead action level based on fewer than the minimum number of required samples under § 141.86 cannot be used to meet the requirements of this paragraph (b)(3).

(4) Within 60 days after the end of each tap sampling period in which a lead action level exceedance occurs, a non-transient non-community water system must deliver the public education materials specified by paragraph (a) of this section as follows:

(i) Post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system until the system is at or below the lead action level based on tap water samples collected in accordance with § 141.86; and

(ii) Distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the non-transient non-community water system. The State may allow the system to utilize electronic transmission in lieu of or combined with printed materials as long as it achieves at least the same coverage.

(iii) For systems that are on standard monitoring, the end of the tap sampling period is June 30 or December 31. For systems that are required to conduct monitoring annually or less frequently, the end of the tap sampling period is September 30 of the calendar year in which the sampling occurs, or, if the State has established an alternate tap sampling period, the last day of that period.

(5) A non-transient non-community water system must repeat the tasks contained in paragraph (b)(4) of this section until the system is at or below the lead action level based on tap water samples collected in accordance with § 141.86. These repeated activities must be completed within 60 days of the end of each tap sampling period. A calculated 90th percentile level at or below the lead action level based on fewer than the minimum number of required samples under § 141.86 cannot be used to meet the requirements of this provision.

(6) A water system may discontinue delivery of public education materials if the system is at or below the lead action level during the most recent six-month tap sampling period conducted pursuant to § 141.86. Such a system must recommence public education in accordance with this section if it subsequently exceeds the lead action level during any tap sampling period.

(7) A water system may request an extension from the State, in writing, to complete the activities in paragraphs (b)(2)(ii) through (vi) of this section for community water systems, or paragraphs (b)(4)(i) and (ii) of this section for non-transient non-community water systems, as follows:

(i) The extension must be approved in writing by the State before the 60-day deadline;

(ii) The State may only grant the extension on a case-by-case basis if the system has demonstrated that it is not feasible to complete the activities in paragraphs (b)(2)(ii) through (vi) of this section for community water systems, or paragraphs (b)(4)(i) and (ii) of this section for non-transient non-community water systems; and

(iii) The activities in paragraph (b)(2) or (4) of this section must be completed no later than six months after the end of the tap sampling period in which the exceedance occurred.

(8) A community water system meeting the criteria of paragraphs (b)(8)(i) and (ii) of this section may apply to the State, in writing (unless the State has waived the requirement for prior State approval), to perform the tasks listed in paragraphs (b)(4) and (5) of this section in lieu of the tasks in paragraphs (b)(2) and (3) of this section if:

(i) The system is a facility, such as a prison or a hospital, where the population served is not capable of or is prevented from making improvements to plumbing or installing point-of-use treatment devices; and

(ii) The system provides water as part of the cost of services provided and does not separately charge for water consumption.

(9) A community water system serving 3,300 or fewer persons may limit certain aspects of their public education programs as follows:

(i) With respect to the requirements of paragraph (b)(2)(ii) of this section, a system serving 3,300 or fewer persons may limit the distribution of the public education materials required under paragraph (b)(2)(ii) to facilities and organizations served by the system that are most likely to be visited regularly by pregnant people and children.

(ii) With respect to the requirements of paragraph (b)(2)(v) of this section, the State may waive this requirement for systems serving 3,300 or fewer persons as long as the system distributes notices to every household served by the system.

(iii) With respect to the requirements of paragraph (b)(2)(vi) of this section, a system serving 3,300 or fewer persons must implement at least one of the activities listed in paragraph (b)(2)(vi).

(c) *Supplemental monitoring and notification of results.* (1) A water system that exceeds the lead action level

based on tap samples collected in accordance with § 141.86 must offer to sample for lead in the tap water of any person served by the water system who requests it. At sites served by a lead, galvanized requiring replacement, or lead status unknown service line, the samples must capture both water in contact with premise plumbing and water in contact with the service line (*e.g.,* first- and fifth-liter samples).

(2) Water systems must offer to sample for lead in the tap water of any person served by a lead, galvanized requiring replacement, or lead status unknown service line who requests it, regardless of whether the water system exceeds the lead action level. The samples must capture both water in contact with premise plumbing and water in contact with the service line (*e.g.,* first- and fifth-liter samples).

(3) All water systems must provide a consumer notice of the individual tap results from supplemental tap water monitoring carried out under the requirements of this paragraph (c) to the persons served by the water system at the specific sampling site from which the sample was taken (*e.g.,* the occupants of the building where the tap was sampled). Water systems must provide the consumer notice in accordance with the requirements of paragraphs (d)(2) through (4) of this section.

(d) *Notification of results*—(1) *Notice requirement.* All water systems must provide a consumer notice of the individual tap results from any lead and copper tap water monitoring carried out under the requirements of § 141.86 to the persons served by the water system at the specific sampling site from which the sample was taken (*e.g.,* the occupants of the building where the tap was sampled).

(2) *Timing of notification.* A water system must provide the consumer notice as soon as practicable but no later than three business days after the water system learns of the tap monitoring results. Notification by mail must be postmarked within three business days of the system learning of the tap monitoring results.

(3) *Content.* (i) The consumer notice for lead must include the results of lead tap water monitoring for the tap that was tested, an explanation of the health effects of lead that meets the requirements of paragraph (a)(1)(ii) of this section, information on possible sources of lead in drinking water that meets the requirements of paragraph (a)(1)(iii)(B) of this section, a list of steps consumers can take to reduce exposure to lead in drinking water that meets the requirements of paragraph (a)(1)(iv) of this section, and contact information for the water system. The notice must also provide the maximum contaminant level goal and the action level for lead and the definitions for these two terms from § 141.153(c).

(ii) The consumer notice for copper must include the results of copper tap water monitoring for the tap that was tested, an explanation of the health effects of copper as provided in appendix B to subpart Q of this part, a list of steps consumers can take to reduce exposure to copper in drinking water, and contact information for the water system. The notice must also provide the maximum contaminant level goal and the action level for copper and the definitions for these two terms from § 141.153(c).

(4) *Delivery.* Water systems must provide consumer notice to persons served at the tap that was sampled. The notice must be provided electronically (*e.g.,* email or text message), by phone call or voice message, hand delivery, by mail, or another method approved by the State. For example, upon approval by the State, a non-transient non-community water system could post the results in a conspicuous area, such as on a bulletin board, in the facility to allow users to review the information. Water systems that choose to deliver the notice to consumers by phone call or voice message must follow up with a written notice to consumers hand delivered or postmarked within 30 days of the water system learning of the tap monitoring results. The notices of lead and copper tap sampling results may be combined in one notice.

(e) *Notification of service line that is known to or may potentially contain lead*—(1) *Notification requirements.* All water systems with lead, galvanized requiring replacement, or lead status unknown service lines in their inventory pursuant to § 141.84(a) and (b) must provide notification of a service line that is known to or may potentially contain lead to customers and all persons served by the water system at the service connection with a lead, galvanized requiring replacement, or lead status unknown service line.

(2) *Timing of notification.* A water system must provide notification no later than 30 days after completion of the baseline inventory required under § 141.84(a)(2) and repeat the notification no later than 30 days after the deadline for each annual update to the service line inventory under § 141.90(e)(4) until the entire service connection is no longer a lead, galvanized requiring replacement, or lead status unknown service line. For notifications to new customers, water systems must provide the notice at the time of service initiation.

(3) *Content*—(i) *Persons served by a confirmed lead service line or galvanized requiring replacement service line.* The notice must include:

(A) A statement that the person's service line is lead or galvanized requiring replacement as applicable.

(B) An explanation of the health effects of lead that meets the requirements of paragraph (a)(1)(ii) of this section.

(C) Steps persons at the service connection can take to reduce exposure to lead in drinking water that meet the requirements of paragraph (a)(1)(iv) of this section.

(D) A statement that the consumer can request to have their tap water sampled in accordance with paragraph (c) of this section.

(E) Include information on how to obtain a copy of the service line replacement plan or view the plan on the internet if the system is required to make the service line replacement plan available online.

(F) Information about opportunities to replace lead and galvanized requiring replacement service lines. Where the water system intends for customer payment for a portion of the replacement where it is required or authorized by State or local law or a water tariff agreement, the notice must include information about programs that provide financing solutions to assist property owners with replacement of their portion of a lead or galvanized requiring replacement service line.

(G) A statement that the water system is required to replace its portion of a lead or galvanized requiring replacement service line when the property owner notifies the water system that they are replacing their portion of the lead or galvanized requiring replacement service line.

(H) A statement that provides instructions for the customer to notify the water system if they disagree with the service line material categorization in the inventory.

(ii) *Persons served by a lead status unknown service line.* The notice must include a statement that the person's service line material is unknown but may be lead, the information in paragraphs (e)(3)(i)(B) through (E) of this section, and information about opportunities to verify the material of the service line.

(4) *Delivery.* The notice must be provided to customers and persons served by the water system at the service connection with a lead, galvanized requiring replacement, or lead status unknown service line, by

mail or by another method approved by the State.

(f) *Notification due to a disturbance to a service line that is known to or may potentially contain lead.* (1) Water systems that cause disturbance to a lead, galvanized requiring replacement, or lead status unknown service line must provide customers and the persons served by the water system at the service connection with information about the potential for elevated lead levels in drinking water as a result of the disturbance. Actions taken by a water system that cause a disturbance include actions that result in a shut off or bypass of water to an individual service line or a group of service lines (*e.g.,* operating a valve on a service line or meter setter, or reconnecting a service line to the main) or other actions that cause a disturbance to a service line or group of service lines, such as undergoing physical action or vibration, that could result in pipe scale dislodging and associated release of particulate lead. The provided information must include:

(i) Public education materials that meet the content requirements in paragraphs (a)(1)(ii) through (iv) and (vi) of this section and contact information for the water system; and

(ii) Instructions for a flushing procedure to remove particulate lead.

(2) If the disturbance of a lead, galvanized requiring replacement, or lead status unknown service line results from the replacement of an inline water meter, a water meter setter, or connector, or from the replacement of a water main whereby the service line pipe is physically cut, the water system must provide the persons served by the water system at the service connection with the information in paragraphs (f)(1)(i) and (ii) of this section and a pitcher filter or point-of-use device certified by an American National Standards Institute accredited certifier to reduce lead, instructions to use the filter, and six months of filter replacement cartridges.

(3)(i) *Persons at the service connection.* The water system must comply with the requirements in this paragraph (f) for persons served by the water system at the service connection before any service line that has been shut off or bypassed is returned to service. Where there was a disturbance, but service was not shut off or bypassed, the water system must comply with the requirements in this paragraph (f) as soon as possible, but not to exceed 24 hours following the disturbance.

(ii) *Customers.* The water system must comply with the requirements in paragraph (f)(1) of this section for customers associated with the service connection who are not persons served by the water system at the service connection (*e.g.,* a customer who is a property owner and renting their property) no later than 30 days following the disturbance.

(4) A water system that conducts a partial or full replacement of a lead or galvanized requiring replacement service line must follow procedures in accordance with the requirements in § 141.84(h). Partial or full replacement of a lead or galvanized requiring replacement service line is not considered a ''disturbance'' for purposes of this paragraph (f).

(g) [Reserved]

(h) *Outreach activities to encourage participation in full service line replacement.* (1) Community water systems that do not meet the service line replacement rate calculated across a cumulative period as required under § 141.84(d)(5) must conduct at least one outreach activity listed in paragraph (h)(2) of this section to discuss their mandatory service line replacement program and opportunities for replacement and to distribute public education materials that meet the content requirements in paragraph (a) of this section except paragraphs (a)(1)(i) and (v) of this section. The water system must conduct the activity in the year following the program year for which the system does not meet their cumulative average replacement rate and annually thereafter until the water system meets the cumulative average replacement rate or until there are no lead, galvanized requiring replacement, or lead status unknown service lines remaining in the inventory, whichever occurs first.

(2) For community water systems serving more than 3,300 persons, the outreach activity must be one of the activities identified in paragraphs (h)(2)(i) through (iv) of this section or the water system must conduct two activities listed in paragraphs (h)(2)(v) through (viii) of this section. For community water systems serving 3,300 persons or fewer, the outreach activity must be one of the activities identified in paragraphs (h)(2)(i) through (viii) of this section.

(i) Conduct a public meeting.

(ii) Participate in a community event to provide information about its service line replacement program.

(iii) Contact customers by phone call or voice message, text message, email, or door hanger.

(iv) Use another method approved by the State to discuss the service line replacement program and opportunities for lead and galvanized requiring replacement service line replacement.

(v) Send certified mail to customers and all persons served by the water system at the service connection with a lead or galvanized requiring replacement service line to inform them about the water system's service line replacement program and opportunities for replacement of the service line.

(vi) Conduct a social media campaign.

(vii) Conduct outreach via the media including newspaper, television, or radio.

(viii) Visit targeted customers (*e.g.,* customers in areas with lower service line replacement participation rates) to discuss the service line replacement program and opportunities for replacement.

(i) *Public education to local and State health agencies*—(1) *Distribution System and Site Assessment results.* All community water systems must provide information to local and State health agencies about Distribution System and Site Assessment activities conducted in accordance with § 141.82(j) including the location of the tap sample site that exceeded 0.010 mg/L, the result of the initial tap sample, the result of the follow up tap sample, the result of water quality parameter monitoring, and any distribution system management actions or corrosion control treatment adjustments made.

(2) *Timing and content.* Community water systems must annually send Distribution System and Site Assessment information and copies of the public education materials provided under paragraphs (a) and (h) of this section for actions conducted in the previous calendar year no later than July 1 of the following year.

(3) *Delivery.* Community water systems must send public education materials and Distribution System and Site Assessment information to local and State health agencies by mail, email, or by another method approved by the State.

(j) *Additional requirements for water systems with multiple lead action level exceedances.* (1) A water system that exceeds the lead action level at least three times in a rolling five-year period, based on tap water samples collected in accordance with § 141.86, must conduct the activities in this section. The first rolling five-year period begins on the compliance date in § 141.80(a)(3). If a water system exceeds the lead action level at least three times within a five-year period, the system must conduct these actions upon the third action level exceedance even if the rolling five-year period has not elapsed.

(2) No later than 60 days after the tap sampling period in which a water system meets the criteria of paragraph (j)(1) of this section, a water system must make available to all consumers pitcher filters or point-of-use devices certified by an American National Standards Institute accredited certifier to reduce lead, six months of replacement cartridges, and instructions for use. A water system must continue to make replacement cartridges available until the system may discontinue actions in accordance with paragraph (j)(6) of this section.

(3) No later than 60 days after a water system exceeds the lead action level for the second time in a rolling five-year period, the water system must submit a filter plan to the State. The State must review and approve the filter plan within 60 days. If the water system subsequently meets the criteria of paragraph (j)(1) of this section again, the water system is not required to re-submit the filter plan, unless the system has made updates to the plan or otherwise requested by the State. The plan must include:

(i) A description of which methods the system will use to make filters and replacement cartridges available in accordance with paragraph (j)(2) of this section (*e.g.,* operating distribution facilities, delivering filters when requested by the consumer); and

(ii) A description of how the system will address any barriers to consumers obtaining filters.

(4) A water system that meets the criteria of paragraph (j)(1) of this section must conduct a community outreach activity to discuss the multiple lead action level exceedances, steps the system is taking to reduce lead in drinking water, measures consumers can take to reduce their risk consistent with the content requirements of paragraph (a)(1)(iv) of this section, and how to obtain a filter certified to reduce lead as required in paragraph (j)(2) of this section. This activity is in addition to the public education activities required under paragraph (b)(2) of this section for community water systems, and under paragraph (b)(4) of this section for non-transient non-community water systems, that exceed the lead action level. The water system must conduct at least one activity from paragraphs (j)(4)(i) through (v) of this section within six months of the start of the tap sampling period after the most recent lead action level exceedance. The water system must conduct at least one of the activities in paragraphs (j)(4)(i) through (v) every six months until the system no longer meets the criteria of paragraph (j)(1) of this section.

(i) Conduct a public meeting.

(ii) Participate in a community event where the system can make information about ongoing lead exceedances available to the public.

(iii) Contact customers by phone call or voice message, text message, email, or door hanger.

(iv) Conduct a social media campaign.

(v) Use another method approved by the State.

(5) A water system that is already conducting an outreach activity listed in paragraph (j)(4) of this section in order to meet the requirements of paragraph (h) of this section may conduct one activity that meets the requirements of paragraphs (j)(4) and (h), unless otherwise directed by the State.

(6) A water system may discontinue the requirements of this paragraph (j) when the system no longer has at least three lead action level exceedances in a rolling five-year period, based on tap water samples collected in accordance with § 141.86. A calculated 90th percentile level at or below the lead action level based on fewer than the minimum number of required samples under § 141.86 cannot be used to meet the requirements of this paragraph (j)(6). States have the discretion to allow a water system to discontinue the requirements of this paragraph (j) earlier if the system has taken actions to reduce lead levels (*e.g.,* re-optimized optimal corrosion control treatment or completed the service line replacement program) and the system is at or below the lead action level for two consecutive tap monitoring periods.

■ 10. Revise § 141.86 to read as follows:

§ 141.86 Monitoring requirements for lead and copper in tap water.

All water systems must sample for lead and copper at taps used to provide water for human consumption in accordance with the requirements of this section.

(a) *Sample site location.* (1) By the start of the first tap monitoring period in which sampling for lead and copper is required under paragraphs (c) and (d) of this section, each water system must identify potential tap sampling sites and submit a site sample plan to the State as required in § 141.90(a)(1)(i). States may require modifications to submitted site sample plans. Each water system must identify a pool of tap sampling sites that will allow the water system to collect the number of lead and copper tap samples required in paragraphs (c)(1) and (d)(1) of this section.

(i) To select sampling sites, a water system must use information regarding the material of service lines and connectors, including lead, copper, and galvanized iron or steel, required to be collected under § 141.84.

(ii) Water systems must identify locations in the site sample plan by selecting from sites in the highest tier, unless the site has been found to be unavailable, in accordance with paragraph (a)(4) of this section.

(iii) Sampling sites cannot include sites with installed point-of-entry (POE) treatment devices or taps with point-of-use devices designed to remove inorganic contaminants, except in water systems using these devices at all service connections for primary drinking water taps to meet other primary and secondary drinking water standards as under § 141.93(c)(1).

(2) A water system that has fewer than five sites with drinking water taps that can be used for human consumption meeting the sample site criteria of this paragraph (a) to reach the required number of sample sites listed in paragraphs (c)(1) and (d)(1) of this section, must collect at least one sample from each tap and collect additional samples from those taps on different days during the tap sampling period to meet the required number of sites. Alternatively, the State may allow these water systems to collect a number of samples fewer than the number of sites specified in paragraphs (c)(1) and (d)(1), provided that 100 percent of all taps that can be used for human consumption are sampled. The State must approve this reduction of the minimum number of samples in writing based on a request from the system or onsite verification by the State.

(3) A water system serving sites with premise plumbing made of lead and/or that are served by a lead service line must collect all samples for monitoring under this section from sites with premise plumbing made of lead and/or served by a lead service line. A water system that cannot identify enough sampling sites with premise plumbing made of lead and/or served by lead service lines to meet the minimum number of sites required in paragraphs (c)(1) and (d)(1) of this section must still collect samples from every available site, in accordance with paragraph (a)(4) of this section, containing premise plumbing made of lead and/or served by a lead service line and collect the remaining samples in accordance with the tiering requirements under paragraph (a)(4).

(4) Sampling sites must be selected from the highest tier available (Tier 1 is the highest tier and Tier 5 is the lowest tier). Sites are available unless a customer refuses to participate in sampling or a system has made at least two outreach attempts at a site and has

not received a response. The number of customer refusals and non-responses for compliance sampling during each tap sampling period must be submitted to the State in accordance with the requirements at § 141.90(a)(2)(viii). Systems may continue conducting outreach at sites considered unavailable and may subsequently add such sites to the site sample plan for any reason, such as receiving a service initiation request from a new property owner or occupant or receiving a new consumer request for sampling. A system without a large enough number of sites from a higher tier to meet the number of sites required in paragraphs (c)(1) and (d)(1) of this section may sample sites from the next highest tier. For water systems where Tier 2 sites comprise at least 20 percent of the residential structures served by the community water system, Tier 2 sites may be sampled even when Tier 1 sites are available.

(i) Tier 1 sampling sites are single-family structures with premise plumbing made of lead and/or served by a lead service line.

(ii) Tier 2 sampling sites are buildings, including multiple-family residences, with premise plumbing made of lead and/or served by a lead service line.

(iii) Tier 3 sampling sites are sites that are served by a lead connector. Tier 3 sites are also sites served by a galvanized service line or containing galvanized premise plumbing identified as ever having been downstream of a lead service line. Tier 3 for community water systems only includes single-family structures.

(iv) Tier 4 sampling sites are sites that contain copper premise plumbing with lead solder installed before the effective date of the State's applicable lead ban. Tier 4 for community water systems only includes single-family structures.

(v) Tier 5 sampling sites are sites that are representative of sites throughout the distribution system. For purpose of this paragraph (a), a representative site is a site in which the plumbing materials used at that site would be commonly found at other sites served by the water system.

(b) *Sample collection protocol.* (1) Except for samples described in paragraphs (b)(1)(iii) and (iv) of this section, all tap samples collected for analysis of lead and copper must be one liter in volume and have stood motionless in the plumbing system and/or service line of each sampling site for at least six hours. Bottles used to collect samples for analysis must be wide-mouth, one-liter sample bottles, as defined at § 141.2. Samples from residential housing must be collected from an interior kitchen or bathroom sink cold-water tap. Samples from a nonresidential building must be collected at an interior cold-water tap from which water is typically drawn for human consumption. Samples may be collected by the system, or the system may allow members of the public to collect samples after providing instructions for collecting samples in accordance with this paragraph (b)(1). Sample collection instructions cannot direct the sample collector to remove or clean the aerator or flush taps prior to the start of the minimum six-hour stagnation period. To protect members of the public from injury due to handling nitric acid, samples may be acidified up to 14 days after the sample is collected. After acidification to resolubilize the metals, the sample must stand in the original container for a period of time, as specified by the approved EPA method in § 141.23 selected for sample analysis. If a system allows members of the public to sample, the system cannot challenge the accuracy of the sampling results based on alleged sample collection errors.

(i) The first-liter sample must be analyzed for lead and copper at sample sites where both contaminants are required to be monitored. At sample sites where only lead is required to be monitored, the first-liter sample may be analyzed for only lead.

(ii) For sites served by a lead service line, which fall under Tier 1 and Tier 2, an additional fifth-liter sample must be collected at the same time as the first-liter sample and must be analyzed for lead. To collect a first-liter-and-fifth-liter-paired sample, systems must collect tap water in five consecutively numbered, wide-mouth, one-liter sample bottles after the water has stood motionless in the plumbing of each sampling site, including the lead service line, for at least six hours without flushing the tap prior to sample collection. Systems must collect samples starting with the first sample bottle and then fill each subsequently numbered bottle in consecutive order until the final bottle is filled, with the water running constantly while the samples are being collected. In this sequence, the first-liter sample is the first sample collected and the fifth-liter sample is the final sample collected.

(iii) State-approved samples collected pursuant to paragraph (b)(3) of this section may include samples with stagnation periods less than six hours, but must meet all the other sample collection criteria in this paragraph (b)(1), including being one-liter in volume using a wide-mouth bottle and collected at an interior tap from which water is typically drawn for human consumption.

(iv) Systems may use different sample volumes and/or different sample collection procedures when they collect follow-up samples for Distribution System and Site Assessment under § 141.82(j)(2) and consumer-requested samples under § 141.85(c) to assess the source of lead. Consumer-requested samples must be collected in accordance with § 141.85(c). Systems must submit these sample results to the State in accordance with § 141.90(a)(2)(i) and (g).

(2) Systems must sample at sites listed in the site sample plan. Additionally, systems must prioritize sampling at the same sites that were sampled in the previous tap sampling period. If such a site no longer qualifies under the tiering criteria or if, for reasons beyond the control of the water system, the water system cannot gain access to a sampling site in order to collect a tap sample, the system must collect the tap sample from another site in its site sample plan that meets the original tiering criteria, where such a site exists. Systems must report any change in sites from the previous tap sampling period, and include an explanation of why sampling sites have changed, as required in § 141.90(a)(2)(v). If changes are needed to the site sample plan, systems must submit their updated site sample plan, as required under § 141.90(a)(1)(i), before the start of the next tap sampling period conducted by the system.

(3) A non-transient non-community water system, or a community water system that meets the criteria of § 141.85(b)(8), that does not have enough sites with taps from which first-liter samples or first-liter-and-fifth-liter-paired samples meeting the six-hour minimum stagnation time can be collected, as provided in paragraph (b)(1) of this section, may apply to the State in writing to request approval to substitute first-liter or first-liter-and-fifth-liter-paired samples that do not meet the six-hour minimum stagnation time. Such systems must collect as many first-liter or first-liter-and-fifth-liter-paired samples from interior taps used for human consumption as possible towards meeting the minimum number of sites required in paragraphs (c)(1) and (d)(1) of this section. For the remaining samples to meet the minimum number required, systems must identify sampling times and locations that would likely result in the longest standing times. The State has the discretion to waive the requirement for prior State approval of sites not meeting the six-hour stagnation time

either through State regulation or written notification to the system.

(c) *Standard monitoring.* Standard monitoring consists of six-month tap monitoring periods that begin on January 1 and July 1.

(1) *Standard monitoring sites.* During a standard tap monitoring period, a water system must collect at least one sample from the number of sites in the following table 1 to this paragraph (c)(1). Standard monitoring sites must be selected in accordance with the sampling tiers identified in paragraph (a) of this section.

TABLE 1 TO PARAGRAPH (c)(1)

System size (number of people served)	Standard number of sites for lead and copper sampling
>100,000	100
10,001 to 100,000	60
3,301 to 10,000	40
501 to 3,300	20
101 to 500	10
≤100	5

(2) *Criteria for standard monitoring.* The following systems must conduct standard monitoring for at least two consecutive tap monitoring periods beginning January 1 or July 1, whichever is sooner, following the tap sampling period in which the criterion is met. Systems may then reduce monitoring in accordance with paragraph (d) of this section.

(i) All water systems with lead or galvanized requiring replacement service lines in their inventories as of November 1, 2027, including those deemed optimized under § 141.81(b)(3), must conduct standard monitoring in the first six-month tap monitoring period following November 1, 2027, unless the system has, before or by that date, met all the following criteria:

(A) The system conducts compliance monitoring of sites that meet the correct priority tiering targeting sites served by lead and galvanized requiring replacement service lines in accordance with paragraph (a)(4) of this section;

(B) The system collects samples in accordance with all sample collection requirements in paragraphs (b)(1) and (3) of this section; and

(C) The system collects either first-liter samples or first-liter-and-fifth-liter-paired samples in accordance with paragraph (b)(1) of this section.

(ii) Any water system whose most recent 90th percentile lead and/or copper results as of November 1, 2027, exceeds the lead and/or copper action level must conduct standard monitoring in the first six-month tap monitoring period following November 1, 2027.

(iii) Systems meeting any of the following criteria:

(A) Any water system that exceeds a lead or copper action level.

(B) Any system that fails to operate at or above the minimum value or within the range of values for the optimal water quality parameters designated by the State under § 141.82(f) for more than nine days in any tap monitoring period as specified in § 141.87.

(C) Any water system that becomes a large water system without corrosion control treatment or any large water system without corrosion control treatment whose lead 90th percentile exceeds the lead practical quantitation limit of 0.005 mg/L.

(D) Any water system that installs OCCT or re-optimizes OCCT as a result of exceeding the lead or copper action level, or any water system that adjusts OCCT following a Distribution System and Site Assessment. Systems conducting standard monitoring under this criterion must continue standard monitoring until the State designates new optimal water quality parameters, at which point systems must comply with paragraph (c)(2)(iii)(E) of this section.

(E) Any water system for which the State has designated new values for optimal water quality parameters under § 141.82.

(F) Any water system that installs source water treatment pursuant to § 141.83(a)(3).

(G) Any water system that has notified the State in writing in accordance with § 141.90(a)(4) of an upcoming addition of a new source or long-term change in treatment, unless the State determines that the addition of the new source or long-term change in treatment is not significant and, therefore, does not warrant more frequent monitoring.

(H) Any water system without lead or galvanized requiring replacement service lines in its inventory that notifies the State under § 141.90(e)(4)(ii) of any subsequently discovered lead or galvanized requiring replacement service lines in its distribution system, unless the system replaces all the discovered service lines before the start of the next tap monitoring period.

(d) *Reduced monitoring based on 90th percentile levels.* Reduced monitoring refers to an annual or triennial tap monitoring period. Each annual or triennial tap monitoring period includes one tap sampling period. The reduced monitoring frequency is based on the 90th percentile value for the water system.

(1) *Reduced monitoring sites.* During a reduced tap monitoring period, a water system must collect at least one sample from the number of sites specified in table 2 to this paragraph (d)(1), unless otherwise specified. Reduced monitoring sites must be selected in accordance with the sampling tiers identified in paragraph (a) of this section. Lead and copper sampling results collected from point-of-use sites under § 141.93(c)(1) cannot be used to meet the criteria for reduced monitoring under this section. States may specify the locations of sample sites when a system is conducting reduced monitoring.

TABLE 2 TO PARAGRAPH (d)(1)

System size (number of people served)	Reduced minimum number of sites for lead and copper sampling
>100,000	50
10,001 to 100,000	30
3,301 to 10,000	20
501 to 3,300	10
101 to 500	5
≤100	5

(2) *Criteria for reduced monitoring.* Systems are eligible for reduced monitoring if they meet all the requirements of this section, including collecting at least the minimum number of samples required, for at least two consecutive tap monitoring periods. The State may require an eligible system to conduct more frequent monitoring.

(i) *Annual monitoring for any system size.* Any system that does not exceed the lead and copper action levels and, for systems with State-designated OWQPs, also maintains the range of optimal water quality parameters designated by the State in accordance with § 141.82(f), for two consecutive six-month tap monitoring periods may reduce the monitoring frequency to annual monitoring. Systems with an annual tap monitoring period must sample at least the standard number of sampling sites for lead in paragraph (c)(1) of this section and at least the reduced number of sites for copper as specified in paragraph (d)(1) of this section. Prior to conducting annual monitoring, systems must receive a written determination from the State approving annual monitoring based on the State's review of monitoring, treatment, and other relevant information submitted by the system as required by § 141.90. For systems that reduce to annual monitoring, the first annual tap monitoring period must

begin no later than six months following the last tap monitoring period.

(ii) *Triennial monitoring for small and medium water systems.* Any small or medium water system that does not exceed the lead and copper action levels and, for systems with State-designated OWQPs, also maintains the range of optimal water quality parameters designated by the State in accordance with § 141.82(f), during three consecutive years of monitoring, including monitoring conducted at both standard and annual frequencies (standard monitoring completed during both six-month periods of a calendar year is considered one year of monitoring), may reduce the monitoring frequency to triennial monitoring. Systems on triennial monitoring must sample at least the reduced number of sites for lead and copper in accordance with paragraph (d)(1) of this section. Prior to conducting triennial monitoring, systems must receive a written determination from the State approving triennial monitoring based on the State's review of monitoring, treatment, and other relevant information submitted by the system as required by § 141.90. For systems that reduce to triennial monitoring, the first triennial tap monitoring period must immediately follow the last annual monitoring period, and the first triennial sampling period must begin no later than three calendar years after the last calendar year in which the system sampled.

(iii) *Triennial monitoring for any system size.* Any water system that demonstrates for two consecutive tap monitoring periods that its 90th percentile lead level, calculated under § 141.80(c)(3), is less than or equal to 0.005 mg/L, the 90th percentile copper level, calculated under § 141.80(c)(3), is less than or equal to 0.65 mg/L and, for systems with State-designated OWQPs, also maintains the range of optimal water quality parameters designated by the State in accordance with § 141.82(f), may reduce the monitoring frequency to triennial monitoring. Systems on triennial monitoring must sample at least the reduced number of sites for lead and copper in accordance with paragraph (d)(1) of this section. Prior to conducting triennial monitoring, systems must receive a written determination from the State approving triennial monitoring based on the State's review of monitoring, treatment, and other relevant information submitted by the system as required by § 141.90. For systems that reduce to triennial monitoring, the first triennial tap monitoring period must immediately follow the last monitoring period, and the first triennial tap sampling period must begin no later than three calendar years after the last calendar year in which the system sampled.

(3) *Tap sampling period under reduced monitoring.* The tap sampling period for systems on reduced monitoring must occur within the months of June, July, August, or September, unless the State has approved a different tap sampling period in accordance with paragraph (d)(3)(i) of this section. Only systems on reduced monitoring can monitor during a tap sampling period that is shorter than the tap monitoring period.

(i) The State may approve a different tap sampling period for systems collecting samples on reduced monitoring. An alternative tap sampling period approved by the State must be a continuous period of time no longer than four consecutive months, must occur entirely within one calendar year, and must represent a time of normal operation where the highest levels of lead are most likely to occur. For a non-transient non-community water system that does not operate during the months of June through September and for which the period of normal operation where the highest levels of lead are most likely to occur is not known, the State must designate a period that represents normal operation for the system.

(ii) Systems that receive State-approval for an alternate tap sampling period under paragraph (d)(3)(i) of this section and have been sampling in the months of June through September must complete their next tap sampling period no later than 21 months, if on annual monitoring, or no later than 45 months, if on triennial monitoring, following the end of the previous tap sampling period.

(iii) Systems with waivers granted pursuant to paragraph (g) of this section that have been collecting samples during the months of June through September and receive State approval to alter their sampling period as per paragraph (d)(3)(i) of this section must collect their next round of samples before the end of the next nine-year period.

(e) *Inclusion of lead and copper tap samples for calculation of the 90th percentile.* Water systems and the State must consider the results of any sampling conducted in addition to the minimum number of samples required in paragraph (c) or (d) of this section, as applicable, in making any determinations (*i.e.,* calculating the 90th percentile lead or copper level in accordance with § 141.80(c)(3)) under this subpart if the samples meet the requirements of paragraphs (a) and (b) of this section. Consumer-requested sampling conducted in accordance with § 141.85(c) must be considered if the sample meets the requirements of paragraphs (a) and (b). If multiple samples from the same site, taken during the same tap sampling period, meet the requirements of this section for consideration of the 90th percentile calculation, only the highest value from each site can be considered, except for systems under paragraph (a)(2) of this section.

(1) Water systems sampling at one or more Tier 1 and/or Tier 2 sites in a tap sampling period that are unable to collect the minimum number of samples required in paragraph (c) or (d) of this section from Tier 1 or 2 sites must consider the lead and copper values from the next highest tier available in accordance with paragraph (a) of this section. If a water system has sufficient samples after including the samples from the next highest available tier to meet the minimum number of samples required in paragraph (c) or (d), the system may not consider additional samples from other available lower tiers. Systems (or the State) must calculate the 90th percentile lead and copper values in accordance with § 141.80(c)(3)(iii) using a total number of samples equal to the minimum number of samples required in paragraph (c) or (d). Systems must submit all additional sampling results to the State that were not used in the 90th percentile calculation.

(2) Systems (or the State when the State is calculating the 90th percentile) cannot include samples collected as part of Distribution System and Site Assessment under § 141.82(j)(2) in the 90th percentile calculation.

(3) Systems (or the State when the State is calculating the 90th percentile) cannot include follow-up samples collected as a result of monitoring after service line replacement under § 141.84(h) in the 90th percentile calculation.

(f) *Invalidation of lead and copper tap samples used in the calculation of the 90th percentile.* A sample invalidated under this paragraph (f) does not count towards determining lead or copper 90th percentile levels under § 141.80(c)(3) or towards meeting the minimum monitoring requirements of paragraph (c) or (d) of this section. The system must report the results of all samples to the State and all supporting documentation for samples the system believes should be invalidated.

(1) The State may invalidate a lead or copper tap water sample if at least one of the following conditions is met:

(i) The laboratory establishes that improper sample analysis caused erroneous results.

(ii) The State determines that a sample collected for compliance purposes under this section, that is not an additional sample collected under paragraph (e) of this section, was taken from a site that did not meet the site selection criteria under paragraph (a) of this section, such as when sites of a higher tier were still available.

(iii) The State determines the sample was collected in a manner that did not meet the sample collection protocol under paragraph (b)(1) of this section.

(iv) The sample container was damaged in transit.

(v) There is a substantial reason to believe that the sample was subject to tampering.

(2) To invalidate a sample under paragraph (f)(1) of this section, the State must document in writing both the decision and the rationale for the decision. States may not invalidate a sample solely on the grounds that a follow-up sample result is higher or lower than that of the original sample.

(3) The water system must collect replacement samples for any samples invalidated under this section if, after the invalidation of one or more samples, the system has too few samples to meet the minimum requirements of paragraph (c)(1) or (d)(1) of this section. Any such replacement samples must be taken as soon as possible, but no later than 20 days after the date the State notifies the system of an invalidated sample or by the end of the tap sampling period, whichever occurs later. Replacement samples taken after the end of the applicable tap sampling period can only be used to meet the monitoring requirements of the applicable tap monitoring period in paragraph (c) or (d) of this section and not a subsequent tap monitoring period. The replacement samples must be taken at the same locations as the invalidated samples, except when the sample is invalidated due to an error in meeting the site selection criteria under paragraph (a) of this section, or a system cannot gain access for sampling. The replacement samples must then be taken at locations that meet the site selection criteria other than those locations already used for sampling during the tap monitoring period.

(g) *Monitoring waivers for systems serving 3,300 or fewer persons.* Any water system serving 3,300 or fewer persons that meets the criteria of this paragraph (g) may apply, in writing, to the State to reduce the frequency of monitoring for lead and/or copper to once every nine years. The system must meet the materials criteria specified in paragraph (g)(1) of this section and the monitoring criteria specified in paragraph (g)(2) of this section. Systems meeting only the criteria for lead may apply for a lead waiver, systems meeting only the criteria for copper may apply for a copper waiver, and systems meeting the criteria for both lead and copper may apply for a full waiver.

(1) *Materials criteria.* The system must demonstrate that its distribution system and service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the system, are free of lead-containing materials and/or copper-containing materials, as those terms are defined in this paragraph (g)(1), as follows:

(i) *Lead.* To qualify for a lead waiver, the water system must certify and provide supporting documentation to the State that the system, including the distribution system and all premise plumbing, is free of all lead-containing materials, as follows:

(A) It contains no plastic pipes which contain lead plasticizers, or plastic service lines which contain lead plasticizers; and

(B) It is free of lead service lines, galvanized requiring replacement service lines, lead connectors, lead pipes, lead soldered pipe joints, and leaded brass or bronze alloy fittings and fixtures, unless such fittings and fixtures meet the specifications of any standard established pursuant to 42 U.S.C. 300g–6(e) (SDWA section 1417(e)).

(ii) *Copper.* To qualify for a copper waiver, the water system must certify and provide supporting documentation to the State that the system contains no copper service lines or premise plumbing.

(2) *Monitoring criteria.* The system must have completed at least one six-month round of standard tap water monitoring for lead and copper at sites approved by the State and from the number of sites required by paragraph (c)(1) of this section and demonstrate that the 90th percentile levels for any and all rounds of monitoring conducted since the system became free of all lead-containing and/or copper-containing materials, as appropriate, meet the following criteria.

(i) *Lead levels.* To qualify for a lead waiver, the system must demonstrate that the 90th percentile lead level does not exceed 0.005 mg/L.

(ii) *Copper levels.* To qualify for a copper waiver, the system must demonstrate that the 90th percentile copper level does not exceed 0.65 mg/L.

(3) *State approval of waiver application.* The State must notify the system of its waiver determination, in writing, setting forth the basis of its decision and any condition(s) of an approved waiver. As a condition of a waiver, the State may require the system to perform specific activities (*e.g.,* limited monitoring, periodic outreach to customers to remind them to avoid installing materials that might void the waiver) to avoid lead or copper concentrations of concern in tap water. The water system must continue monitoring for lead and copper at the tap as required by paragraphs (c) and (d) of this section, as appropriate, until it receives written notification from the State that a waiver has been approved.

(4) *Monitoring frequency for systems with waivers.* (i) A system with a full waiver must conduct tap monitoring for lead and copper in accordance with paragraph (d) of this section at least once every nine years. A system with a full waiver must provide the State with the materials certification specified in paragraph (g)(1) of this section for both lead and copper when submitting their tap sampling results to the State. Samples collected every nine years must be collected no later than every ninth calendar year.

(ii) A system with a lead waiver or copper waiver must conduct tap monitoring for only the waived contaminant in accordance with paragraph (d) of this section at least once every nine years. A system with a lead waiver or copper waiver must provide the State with the materials certification specified in paragraph (g)(1) of this section for only the waived contaminant when submitting their tap sampling results to the State. Also, a system must continue to monitor for the non-waived contaminant in accordance with the requirements of paragraphs (c) and (d) of this section, as appropriate.

(iii) Any water system with a waiver must notify the State in writing in accordance with § 141.90(a)(4) about any addition of a new source water or long-term change in treatment, as described in that section. The State may add or modify waiver conditions (*e.g.,* require recertification that the system is free of lead-containing and/or copper-containing materials, require additional round(s) of monitoring), if the State deems any modifications are necessary to address treatment or source water changes at the system.

(iv) If a system with a waiver becomes aware that the system is no longer free of lead-containing or copper-containing materials, as appropriate (*e.g.,* as a result of new construction or repairs), the system must notify the State in writing no later than 60 days after becoming aware of such a change.

(5) *Discontinuation of eligibility.* A system with a waiver where any of the following conditions occurs is not allowed to continue monitoring under its waiver:

(i) A system with a full waiver or a lead waiver no longer satisfies the materials criteria of paragraph (g)(1)(i) of this section or has a 90th percentile lead level greater than 0.005 mg/L.

(ii) A system with a full waiver or a copper waiver no longer satisfies the materials criteria of paragraph (g)(1)(ii) of this section or has a 90th percentile copper level greater than 0.65 mg/L.

(iii) The State notifies the system, in writing, that the waiver has been revoked, setting forth the basis of its decision.

(6) *Requirements following waiver revocation.* A system whose waiver is revoked may re-apply for a waiver when it meets the appropriate materials criteria and monitoring criteria of paragraphs (g)(1) and (2) of this section. A system whose waiver is revoked by the State is subject to the following corrosion control treatment and lead and copper tap water monitoring requirements:

(i) If the system exceeds the lead and/or copper action level, the system must implement or re-optimize OCCT in accordance with the deadlines specified in § 141.81, and any other applicable requirements of this subpart.

(ii) If the system is at or below both the lead and copper action levels, the system must monitor for lead and copper at the tap no less frequently than once every three years using the reduced number of sampling sites specified in paragraph (d)(1) of this section.

(7) *Pre-existing waivers.* Waivers approved by the State in writing prior to the compliance date specified in § 141.80(a)(3) are still in effect if the system has demonstrated that it is both free of lead-containing and copper-containing materials, as required by paragraph (g)(1) of this section and that its 90th percentile lead levels and 90th percentile copper levels meet the criteria of paragraph (g)(2) of this section, and the system does not meet the waiver ineligibility criteria of paragraph (g)(5) of this section.

(h) *Publicly accessible tap monitoring results used in the 90th percentile calculation.* Unless done by the State, all water systems must make the tap monitoring results, including data used in the 90th percentile calculation under § 141.80(c)(3), publicly accessible within 60 days of the end of the tap sampling period. Under this paragraph (h), water systems are not required to make the addresses of tap sampling sites publicly accessible.

(1) Large water systems must make the tap monitoring results and associated data publicly accessible in a digital format.

(2) Small and medium water systems must make the tap monitoring results and associated data publicly accessible in either a print or digital format.

(3) Water systems must certify to the State, in writing, compliance with this paragraph (h) in accordance with § 141.90(a)(2)(iii) and must retain monitoring data in accordance with the recordkeeping requirements under § 141.91.

■ 11. Revise § 141.87 to read as follows:

§ 141.87 Monitoring requirements for water quality parameters.

All large water systems and all medium water systems with corrosion control treatment (unless deemed optimized under § 141.81(b)(3)), and all small and medium water systems that exceed the lead action level or copper action level must sample and monitor water quality parameters in addition to lead and copper in accordance with the requirements of this section. Any system may be required to monitor water quality parameters as determined by the State, including as provided in this section.

(a) *General requirements*—(1) *Distribution system samples for water quality parameters.* (i) Distribution system samples collected at water taps must be representative of water quality throughout the distribution system, considering the number of persons served, the different sources of water, the different treatment methods employed by the system, and seasonal variability. Sites selected for sampling in the distribution system under this section can be the same as or different from tap sampling sites targeted for lead and copper sampling under § 141.86(a). Systems may consider selecting sites also used for total coliform sampling under § 141.21(a)(1). Sites selected for sampling in the distribution system under this section must be included in the site sample plan specified under § 141.90(a)(1). The site sample plan must be updated prior to changes to the sampling locations.

(ii) Samples collected in the distribution system must be analyzed for the following parameters, when applicable, as specified:

(A) pH;

(B) Alkalinity;

(C) Orthophosphate (as PO_4), when an inhibitor containing an orthophosphate compound is used;

(D) Silica, when an inhibitor containing a silicate compound is used; and

(E) Any parameters specified by the State under § 141.82(a)(1) or (f)(6).

(2) *Entry point samples for water quality parameters.* (i) Samples collected at the entry point(s) to the distribution system must be from locations representative of each source water after treatment. If a system draws water from more than one source water and the source waters are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions when water is representative of all sources typically being used.

(ii) Except as provided in paragraph (b)(3)(ii) of this section for ground water systems, the following parameters must be measured at each entry point to the distribution system, when applicable, as specified:

(A) pH;

(B) When alkalinity is adjusted as part of corrosion control, a reading of the dosage rate of the chemical used to adjust alkalinity, and the alkalinity concentration;

(C) When a corrosion inhibitor is used as part of corrosion control, a reading of the dosage rate of the inhibitor used, and the concentration of orthophosphate (as PO_4) or silica (whichever is applicable); and

(D) Any parameters specified by the State under § 141.82(a)(1) or (f)(6).

(b) *Standard monitoring for water quality parameters*—(1) *Number of samples*—(i) *Distribution system samples.* Systems must collect two distribution system samples for applicable water quality parameters during each monitoring period specified under paragraphs (b)(2) through (4) of this section from each of the minimum number of sites listed in table 1 to this paragraph (b)(1)(i). Systems that collect distribution system samples for water quality parameters from additional sites as a result of the Distribution System and Site Assessment requirements in § 141.82(j) must add those sites to the minimum number of sites listed in table 1 to this paragraph (b)(1)(i) up to a maximum of not more than twice the minimum number of sites.

TABLE 1 TO PARAGRAPH (b)(1)(i)

System size (number of people served)	Minimum number of sites for water quality parameters
>100,000	25

TABLE 1 TO PARAGRAPH (b)(1)(i)—Continued

System size (number of people served)	Minimum number of sites for water quality parameters
10,001 to 100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

(ii) *Samples at entry points.* (A) Systems without installed or re-optimized OCCT and without State-designated optimal water quality parameters required to collect entry point samples must collect a minimum of two entry point samples for each applicable water quality parameter at each entry point to the distribution system at least once during each monitoring period specified in paragraph (b)(2) of this section.

(B) Systems with installed OCCT or re-optimized OCCT and/or State-designated optimal water quality parameters required to collect entry point samples, including as provided in paragraph (b)(3)(iii) of this section, must collect one entry point sample for each applicable water quality parameter at each entry point to the distribution system at least once every two weeks during each monitoring period the system is required to conduct sampling as specified in paragraphs (b)(3) and (4) and (c) of this section.

(2) *Initial sampling for water systems.* A large water system without corrosion control treatment must begin monitoring for water quality parameters as specified in paragraphs (b)(2)(i) and (ii) of this section during the first two six-month monitoring periods beginning no later than January 1 of the calendar year after the system either becomes a large water system or exceeds the practical quantitation limit for lead. Any medium water system without corrosion control treatment that exceeds the lead action level or the copper action level must begin monitoring for applicable distribution system and entry point water quality parameters as specified in paragraphs (b)(2)(i) and (ii) for two consecutive six-month monitoring periods beginning the month immediately following the end of the tap monitoring period in which the action level exceedance occurred. Any small water system that exceeds the lead or copper action level must begin monitoring for applicable distribution system and entry point water quality parameters as specified in paragraphs (b)(2)(i) and (ii) for two consecutive six-month monitoring periods beginning the month immediately following the end of the tap monitoring period in which the action level exceedance occurred. Systems must continue monitoring as described by paragraphs (b)(3) and (4) of this section.

(i) At sites in the distribution system, collect two samples for:

(A) pH; and

(B) Alkalinity.

(ii) At each entry point to the distribution system, collect all the applicable parameters listed in paragraph (a)(2)(ii) of this section.

(3) *Monitoring after installation of OCCT or re-optimized OCCT.* (i) A system that modifies or installs OCCT pursuant to § 141.81(d)(5) or (e)(5) and is required to conduct follow-up monitoring for lead or copper pursuant to § 141.81(d)(6) or (e)(6) must monitor for applicable distribution system and entry point water quality parameters as specified in paragraphs (a)(1) and (2) of this section every six months until the State designates new water quality parameter values for OCCT pursuant to § 141.82(f). Water systems must collect these samples at a regular frequency throughout the six-month monitoring period to reflect seasonal variability.

(ii) Any ground water system can limit entry point sampling described in paragraph (a)(2) of this section to those entry points that are representative of water quality and treatment conditions throughout the system. If water from untreated ground water sources mixes with water from treated ground water sources, the system must monitor for water quality parameters both at representative entry points receiving treatment and representative entry points receiving no treatment. Prior to the start of any monitoring under this paragraph (b)(3)(ii), the water system must provide to the State, written information and documentation identifying the selected entry points, including information on seasonal variability, sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(iii) States may require small water systems with corrosion control treatment for which the State has not designated optimal water quality parameters that do not exceed the lead action level or copper action level to conduct water quality parameter monitoring as described in this paragraph (b) or the State can develop its own water quality parameter monitoring structure for these systems.

(4) *Monitoring by systems with State-designated optimal water quality parameter values for OCCT.* Monitoring must occur at a regular frequency throughout the monitoring period to reflect seasonal variability and be consistent with the requirements in paragraphs (a)(1) and (2) of this section.

(i) Medium water systems with corrosion control treatment and all large water systems must sample for the applicable water quality parameters designated by the State and determine compliance with the requirements of § 141.82(g) every six months with the first six-month monitoring period to begin on either January 1 or July 1, whichever comes first, after the State specifies the optimal values under § 141.82(f).

(ii) A small water system with corrosion control treatment that exceeds the lead action level or copper action level must begin monitoring during the standard six-month tap monitoring period immediately following the tap monitoring period in which the action level exceedance(s) occurs and continue monitoring until the water system no longer exceeds the lead action level and/or copper action level and meets the State-designated optimal water quality parameters in two consecutive six-month tap monitoring periods under § 141.86(c). For any small water system that is subject to a reduced monitoring frequency pursuant to § 141.86(d) at the time of the action level exceedance, the start of the six-month monitoring period under this paragraph (b)(4)(ii) must coincide with the start of the tap monitoring period under § 141.86(c).

(iii) Compliance with State-designated optimal water quality parameter values must be determined as specified under § 141.82(g).

(iv) States have the discretion to require systems described in paragraph (b)(4)(ii) of this section to continue to monitor optimal water quality parameters.

(c) *Reduced monitoring.* (1) A medium or large water system that maintains the range of values for the water quality parameters reflecting OCCT specified by the State under § 141.82(f) and does not exceed the lead action level or copper action level in either of the two consecutive six-month monitoring periods under paragraph (b)(4) of this section must collect two distribution system samples for applicable water quality parameters specified in paragraph (a)(1)(ii) of this section from each of the minimum number of sites listed in table 2 to this paragraph (c)(1) during each six-month monitoring period. These water systems must collect these samples at a regular frequency throughout the six-month monitoring period to reflect seasonal

variability. A system meeting the requirements of this paragraph (c)(1) must continue to monitor at the entry point(s) to the distribution system as specified in paragraph (a)(2) of this section. Systems with sites added as a result of the Distribution System and Site Assessment requirements in § 141.82(j) must continue to sample at the added sites up to a maximum of not more than twice the minimum number of sites specified in table 1 to paragraph (b)(1)(i) of this section.

TABLE 2 TO PARAGRAPH (c)(1)

System size (number of people served)	Reduced minimum number of sites for water quality parameters
>100,000	10
10,001 to 100,000	7
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

(2)(i) A water system that maintains the range of values for the water quality parameters reflecting OCCT specified by the State under § 141.82(f) and does not exceed the lead action level or copper action level during three consecutive years of monitoring may reduce the frequency with which it collects distribution system samples for applicable water quality parameters specified in paragraph (a)(1)(ii) of this section from each of the minimum number of sites listed in table 2 to paragraph (c)(1) of this section from every six months to annually. This sampling must begin during the calendar year immediately following the end of the monitoring period in which the third consecutive year of six-month monitoring occurs.

(ii) A water system may reduce the frequency with which it collects distribution system samples for applicable water quality parameters specified in paragraph (c)(1) of this section to every year if it demonstrates during two consecutive monitoring periods that its tap water lead level at the 90th percentile is less than or equal to the practical quantitation limit for lead of 0.005 mg/L, that its tap water copper level at the 90th percentile is less than or equal to 0.65 mg/L as calculated in accordance with § 141.80(c)(3), and that it also has maintained the range of values for the water quality parameters reflecting OCCT specified by the State under § 141.82(f).

(3) A water system that conducts sampling at taps for water quality parameters annually must collect these samples at a regular frequency throughout the year to reflect seasonal variability.

(4) A water system monitoring at a reduced frequency that fails to operate at or within the range of values for the optimal water quality parameters designated by the State in § 141.82(f) for more than nine cumulative days, as specified in § 141.82(g), in any six-month period under paragraph (b)(4) of this section must resume distribution system sampling in accordance with the number and frequency requirements in paragraph (b)(4). Such a system may resume annual monitoring for water quality parameters in the distribution system at the reduced number of sites specified in paragraph (c)(1) of this section after it has completed two subsequent consecutive six-month rounds of monitoring that meet the criteria of paragraph (c)(1) of this section and/or may resume annual monitoring for water quality parameters in the distribution system at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (c)(2)(i) or (ii) of this section.

(5) Any water system monitoring at a reduced frequency that exceeds the lead action level or copper action level must resume standard water quality parameter monitoring beginning with the six-month period immediately following the tap monitoring period in which the action level exceedance(s) occurs. When the water system no longer exceeds the lead action level and/or copper action level and meets the State-designated optimal water quality parameters in two consecutive six-month tap monitoring periods, the system may then reduce monitoring in accordance with paragraphs (c)(1) and (2) of this section.

(d) *Additional monitoring by systems.* The results of any monitoring conducted in addition to the minimum requirements of this section must be considered by the water system and the State in determining concentrations of water quality parameters under this section or § 141.82.

■ 12. Amend § 141.90 by:
■ a. Revising paragraphs (a), (b), and (c)(1) and (4);
■ b. Adding paragraph (c)(5);
■ c. Revising paragraph (e);
■ d. Revising and republishing paragraph (f); and
■ e. Revising paragraphs (g) through (i) and (j)(1) and (2).

The revisions and addition read as follows:

§ 141.90 Reporting requirements.

* * * * *

(a) *Reporting requirements for tap monitoring for lead and copper and for distribution system and entry point monitoring for water quality parameters.* (1) By the start of a system's first lead and copper tap monitoring period in § 141.86(c) and (d), water systems must submit the following to the State:

(i) A site sample plan, including a list of tap sample site locations for lead and copper sampling identified from the inventory in § 141.84(a), and a list of tap sampling sites and entry point to the distribution system sites for water quality parameter monitoring selected under § 141.87(a)(1) and (2). Changes to the site sample plan require systems to submit an updated site sample plan to the State before the start of the next tap sampling period conducted by the system. The State may require modifications to the site sample plan as necessary.

(A) Water systems with lead, galvanized requiring replacement, and/or lead status unknown service lines in the service line inventory conducted under § 141.84(a) and (b) must evaluate the tap sampling locations for lead and copper used in their sampling pool prior to the start of each tap sampling period, beginning with the compliance date specified in § 141.80(a)(3). Evaluations that result in changes to the site sample plan require systems to submit an updated site sample plan to the State prior to each tap sampling period conducted by the system.

(B) A water system that cannot identify enough sampling sites with premise plumbing made of lead and/or served by lead service lines to meet the minimum number of sample sites required in § 141.86(c)(1) or (d)(1), as required under § 141.86(a)(3), must submit documentation, including documentation of applicable customer refusals for sampling, in support of the conclusion that there are an insufficient number of available sites with premise plumbing made of lead and/or served by lead service lines, prior to the next tap sampling period.

(ii) A copy of the sample collection instructions that are provided to individuals who are sampling, which meets the requirements of § 141.86(b). If the water system seeks to modify its sample collection instructions specified in this paragraph (a)(1)(ii), it must submit the updated version of the instructions to the State for review prior to the next tap sampling period.

(2) Notwithstanding the requirements of § 141.31(a), a water system must report the information specified in paragraphs (a)(2)(i) through (vii) of this section, for all lead and copper tap samples specified in § 141.86 and for all water quality parameter distribution system and entry point samples specified in § 141.87, within the first 10 days following the end of each applicable sampling period specified in §§ 141.86 and 141.87, unless the State has specified an earlier reporting requirement. For tap sampling periods with a duration less than six months, the end of the sampling period is the last date samples can be collected as specified in § 141.86.

(i) The results of all tap samples for lead and copper collected during the tap sampling period, including results for both first- and fifth-liter samples collected at lead service line sites, the location of each site, and the site selection criteria under § 141.86(a)(3) and (4) used as the basis for which the site was selected for the water system's sampling pool;

(ii) Documentation for each tap water lead or copper sample for which the water system requests invalidation pursuant to § 141.86(f);

(iii) With the exception of initial tap sampling conducted pursuant to § 141.86(c)(2)(i), a certification that the results of monitoring from the tap monitoring period before the applicable tap monitoring period described in this paragraph (a)(2) were made publicly accessible, as specified in § 141.86(h);

(iv) The 90th percentile lead and copper concentrations calculated from lead and copper tap water samples collected during each tap sampling period in accordance with § 141.80(c)(3), unless the State calculates the water system's 90th percentile lead and copper levels under paragraph (h) of this section;

(v) With the exception of initial tap sampling conducted pursuant to § 141.86(c)(2)(i), the water system must identify any site which was not sampled during the tap monitoring period previous to the applicable tap monitoring period described in this paragraph (a)(2), and include an explanation of why sampling sites have changed;

(vi) The results of all tap samples for water quality parameters that are required to be collected under § 141.87(b) through (d);

(vii) The results of all samples collected at the entry point(s) to the distribution system for applicable water quality parameters under § 141.87(b) through (d); and

(viii) The number of sites from which the system requested customer participation for sampling during the tap sampling period and the customer was either non-responsive after two attempts or refused to participate.

(3) For a non-transient non-community water system, or a community water system meeting the criteria of § 141.85(b)(8), that does not have enough taps that can provide first liter or first-and fifth-liter paired samples meeting the six-hour minimum stagnation time, the water system must either:

(i) Provide written documentation identifying standing times and locations for samples that do not meet the six-hour minimum stagnation time to make up a system's sampling pool in order to meet the minimum number of sites to sample as required in § 141.86(b)(3) by the start of the system's first applicable tap monitoring period under § 141.86(c), or if there are changes to the documentation, prior to the next tap sampling period, unless the State has waived prior approval of sample sites not meeting the six-hour stagnation time selected by the water system pursuant to § 141.86(b)(3); or

(ii) If the State has waived prior approval of sample sites not meeting the six-hour stagnation time selected by the system, identify, in writing, each site that did not meet the six-hour minimum stagnation time and the length of standing time for that particular substitute sample collected pursuant to § 141.86(b)(3) and include this information with the lead and copper tap sample results required to be submitted pursuant to paragraph (a)(2)(i) of this section.

(4) At a time specified by the State, or if no specific time is designated, as early as possible but no later than six months prior to the addition of a new source or any long-term change in water treatment, a water system must submit written documentation describing the addition of a new source or long-term change in treatment to the State. Systems may not implement the addition of a new source or long-term treatment change without State approval. The State must review and approve the addition of a new source or a long-term change in water treatment before it can be implemented by the water system. The State may require any such water system to take actions before or after the addition of a new source or long-term treatment change to ensure that the water system will operate and maintain optimal corrosion control treatment, such as additional water quality parameter monitoring, additional lead or copper tap sampling, and re-evaluating corrosion control treatment. Examples of long-term treatment changes include but are not limited to the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants (*e.g.,* alum to ferric chloride), and switching corrosion inhibitor products (*e.g.,* orthophosphate to blended phosphate). Long-term treatment changes can also include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes where a new source has not been added.

(5) Any system serving 3,300 or fewer persons applying for a monitoring waiver under § 141.86(g), or subject to a waiver granted pursuant to § 141.86(g)(3), must provide the following information to the State in writing by the specified deadline:

(i) By the start of the system's first applicable tap monitoring period in § 141.86(c) and (d), any water system applying for a monitoring waiver must provide the documentation required to demonstrate that it meets the waiver criteria of § 141.86(g)(1) and (2) to the State.

(ii) Prior to the beginning of each tap monitoring period in which the system desires to maintain its monitoring waiver pursuant to § 141.86(g)(2) or (4), the system must provide the information required by § 141.86(g)(4)(i) and (ii) to the State.

(iii) No later than 60 days after it becomes aware that it is no longer free of lead-containing and/or copper-containing material, as appropriate, each system with a monitoring waiver must provide written notification to the State setting forth the circumstances resulting in the lead-containing and/or copper-containing materials being discovered in the system and what corrective action, if any, the system plans to take to remove these materials.

(6) Each ground water system that limits water quality parameter monitoring to a subset of entry points under § 141.87(b)(3)(ii) must provide, by the commencement of such monitoring, written correspondence to the State that identifies the selected entry points and includes information sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(b) *Source water monitoring reporting requirements.* A water system must

report the following within the first 10 days following the end of each source water monitoring period (*i.e.,* annually, per compliance period, per compliance cycle) specified in § 141.88.

(1) The sampling results for all source water samples collected in accordance with § 141.88.

(2) With the exception of the first round of source water sampling conducted pursuant to § 141.88(b), the system must specify any site which was not sampled during the previous monitoring period, and include an explanation of why the sampling point has changed.

(c) * * *

(1) For water systems demonstrating that they have already optimized OCCT without optimized water quality parameters set by the State, information required in § 141.81(b)(1) through (3).

* * * * *

(4) For systems required to install OCCT or re-optimized OCCT designated by the State under § 141.82(d), a letter certifying that the system has completed installing that treatment.

(5) For systems not required to complete the corrosion control treatment steps under § 141.81(f), a letter certifying that the system has completed the mandatory service line replacement program or that the system has met the minimum annual replacement rate calculated under § 141.81(f)(1)(ii).

* * * * *

(e) *Service line inventory and replacement reporting requirements.* For the purposes of this paragraph (e), the first mandatory service line replacement ''program year'' is from the compliance date specified in § 141.80(a)(3) to the end of the next calendar year, where every program year afterwards is on a calendar year basis. Water systems must report the following information to the State to demonstrate compliance with the requirements of § 141.84:

(1) No later than October 16, 2024, the water system must submit an initial inventory of service lines as required in § 141.84(a)(1), including the following:

(i) The number of lead service lines in the initial inventory;

(ii) The number of galvanized requiring replacement service lines in the initial inventory;

(iii) The number of lead status unknown service lines in the initial inventory; and

(iv) Where ownership of the service line is shared, the system must report the information in paragraphs (e)(1)(i) through (iii) of this section counting each full service line only once.

(2) No later than the compliance date in § 141.80(a)(3), the water system must submit to the State a baseline inventory of service lines and connectors as required in § 141.84(a)(2) through (4), including the following:

(i) The total number of lead service lines in the baseline inventory;

(ii) The total number of galvanized requiring replacement service lines in the baseline inventory;

(iii) The total number of lead status unknown service lines in the baseline inventory;

(iv) The total number of non-lead service lines in the baseline inventory;

(v) The total number of lead connectors in the baseline inventory;

(vi) The total number of connectors of unknown material in the baseline inventory; and

(vii) Where ownership of the service line is shared, the system must report the information in paragraphs (e)(2)(i) through (vi) of this section counting each full service line only once.

(3) Any water system that has inventoried one or more lead, galvanized requiring replacement, or lead status unknown service lines in its distribution system must:

(i) No later than the compliance date in § 141.80(a)(3), submit a service line replacement plan as specified in § 141.84(c) to the State.

(ii) By January 30 after the end of the first program year, and annually by January 30 thereafter, certify to the State that there have been no updates to the service line replacement plan or, if there have been updates, submit an updated service line replacement plan. A water system may provide instructions on how to access the updated plan online instead of providing the entire updated plan to the State.

(iii) Systems replacing service lines under a schedule based on the deferred deadlines criteria in § 141.84(d)(5)(vi) must also meet the requirements described in § 141.84(c)(3) for submitting information to the State.

(4) The water system must provide the State with an updated inventory by January 30 after the end of the first program year, and annually by January 30 thereafter. The updated inventory must conform with inventory requirements under § 141.84(a) and (b). A water system must provide the information regarding service line material identification and replacement as specified in § 141.84(b)(2)(iv) if providing instructions on how to access the updated inventory online instead of providing a fixed copy of the entire updated inventory as described in § 141.84(b) to the State.

(i) When the water system has demonstrated that its inventory does not contain lead, galvanized requiring replacement, and lead status unknown service lines, and known lead connectors and connectors of unknown material, it is no longer required to submit inventory updates to the State, except as required in paragraph (e)(4)(ii) of this section.

(ii) In the case that a water system meeting the requirements of paragraph (e)(4)(i) of this section subsequently discovers any lead or galvanized requiring replacement service lines or lead connectors in its distribution system, it must notify the State within 60 days of discovering the service line(s) and connector(s) and prepare an updated inventory in accordance with § 141.84(b) on a schedule established by the State.

(5) By January 30 after the end of the first program year, and annually by January 30 thereafter, the water system must certify to the State that it replaced any encountered lead connectors in accordance with § 141.84(e) or that it encountered no lead connectors during the calendar year.

(6) By January 30 after the end of the first program year, and annually by January 30 thereafter, the water system must certify to the State that it conducted the notification and mitigation requirements for any partial and full service line replacements in accordance with § 141.84(h) or that it conducted no replacements of lead or galvanized requiring replacement service lines during the calendar year.

(7) The water system must provide the following information about customer-initiated lead and galvanized requiring replacement service line replacements:

(i) By January 30 after the end of the first program year, and annually by January 30 thereafter, the water system must certify that it completed all customer-initiated lead and galvanized requiring replacement service line replacements in accordance with § 141.84(f).

(ii) If the water system cannot meet the 45-day deadline to complete a customer-initiated lead or galvanized requiring replacement service line replacement pursuant to § 141.84(f), it must notify the State within 30 days following the replacement deadline.

(8) By January 30 after the end of the first program year, and annually by January 30 thereafter, water systems conducting mandatory service line replacement pursuant to § 141.84(d) must submit the following information to the State:

(i) The following information from the most recent updated inventory submitted under paragraph (e)(4) of this section, in accordance with table 2 to § 141.84(d)(6)(iii)(A):

(A) The total number of lead service lines in the inventory;

(B) The total number of galvanized requiring replacement service lines in the inventory;

(C) The total number of lead status unknown service lines in the inventory;

(D) The total number of non-lead service lines in the inventory;

(E) The total number of lead connectors in the inventory;

(F) The total number of connectors of unknown material in the inventory; and

(G) Where ownership of the service line is shared, the system must report the information in paragraphs (e)(8)(i)(A) through (F) of this section counting each full service line only once;

(ii) The total number of full lead service line replacements and full galvanized requiring replacement service line replacements that have been conducted in the preceding program year and the address associated with each replaced service line;

(iii) The total number of partial lead service line replacements and partial galvanized requiring replacement service line replacements that have been conducted in the preceding program year and the address associated with each partially replaced service line;

(iv) The total number of lead connectors that have been replaced or removed in each preceding program year and the address associated with each replaced or removed lead connector;

(v) The number of service lines in the replacement pool updated at the beginning of the preceding program year in accordance with § 141.84(d)(6)(i);

(vi) The total number of lead status unknown service lines determined to be non-lead in the preceding program year;

(vii) The address of each non-lead service line discovered in the preceding program year to be a lead or galvanized requiring replacement service line and the method(s) originally used to categorize the material of the service line;

(viii) The applicable deadline for completion of service line replacement and the expected date of completion of service line replacement; and

(ix) The total number of lead and galvanized requiring replacement service lines not replaced because the system does not have access to conduct full service line replacement.

(9) Systems validating service line inventories pursuant to § 141.84(b)(5) must submit a list of the locations of any non-lead service lines identified to be a lead or galvanized requiring replacement service line as well as the method(s) used to categorize the service lines as a result of the assessment. The system must submit the specific version (including the date) of the service line inventory used to determine the number of non-lead service lines used when the number of non-lead service lines in the validation pool was determined. The system may not use an inventory older than the inventory update that was submitted to the State pursuant to § 141.84(b)(2)(iv) at the start of the year in which the validation pool was determined. The information must be submitted no later than January 30 following seven years after the compliance date in § 141.80(a)(3) unless otherwise specified by the State in accordance with § 141.84(b)(5)(iv). Documentation of previous validation efforts may be submitted by the compliance date in § 141.80(a)(3) for approval by the State as described in § 141.84(b)(5)(vi).

(10) By January 30 after the end of the first program year, and annually by January 30 thereafter, the water system must submit to the State documentation of the reasons for each service line not replaced due to lack of access in accordance with § 141.84(d)(2). The system must also submit to the State documentation of each reasonable effort conducted where the system was not able to obtain property owner consent in accordance with § 141.84(d)(3) where consent is required by State or local law.

(11) [Reserved]

(12) Any system that collects samples following a partial or full lead or galvanized requiring replacement service line replacement required by § 141.84(h)(1)(iv) or (h)(3)(iv) must report the results to the State within the first ten days following the month in which the system receives the results or as specified by the State. Systems must also report any additional information as specified by the State, and in a time and manner prescribed by the State, to verify that all partial lead and galvanized requiring replacement service line replacement activities have taken place.

(13) By January 30 after the end of the first program year, and annually by January 30 thereafter, the water system must certify to the State that it offered to inspect service lines that consumers who suspected the inventory incorrectly categorized their service line material within 30 days of receiving the customer notification in accordance with § 141.84(b)(4).

(f) *Public education program reporting requirements.* (1) Any water system conducting public education requirements in § 141.85 must submit a copy of all written public education materials to the State prior to delivery. The State may require the system to obtain approval of the content of written public education materials prior to delivery in accordance with § 141.85(a)(1).

(2) Any water system that is subject to the public education requirements in § 141.85 must, within 10 days after the end of each period in which the system is required to perform public education in accordance with § 141.85(b), send written documentation to the State that contains:

(i) The public education materials that were delivered, and a statement certifying that the water system has delivered the public education materials that meet the content requirements in § 141.85(a) and the delivery requirements in § 141.85(b); and

(ii) A list of all the newspapers, radio stations, television stations, and facilities and organizations to which the system delivered public education materials during the period in which the system was required to perform public education tasks. Unless required by the State, a system that previously has submitted this information need not resubmit it as long as there have been no changes in the distribution list and the system certifies that the public education materials were distributed to the same list submitted previously.

(3) Each water system must send an example copy of the consumer notification of tap results to the State along with a certification that the notification has been distributed in a manner consistent with the requirements of § 141.85(d), according to the schedule as follows:

(i) No later than three months following the end of the tap sampling period, for tap samples used to calculate the 90th percentile value as described in § 141.86, an example copy of the consumer notification provided and a certification that the notification has been distributed in a manner consistent with the requirements of § 141.85(d).

(ii) Annually by January 30, for tap samples from the previous program year that are not included in paragraph (f)(3)(i) of this section, including, but not limited to consumer-requested samples outside the tap sampling period for systems on reduced monitoring, an example copy of the consumer notification provided and a certification that the notification has been distributed in a manner consistent with the requirements of § 141.85(d).

(4) Annually by January 30, the water system must certify to the State that it delivered annual notification and service line information materials to customers and all persons served by the water system at the service connection

with a lead, galvanized requiring replacement, or lead status unknown service line in accordance with § 141.85(e) for the previous calendar year. The water system must also provide an example copy of the notification and information materials for lead, galvanized requiring replacement, and lead status unknown service lines to the State.

(5) [Reserved]

(6) Annually by January 30, the water system must certify to the State that it delivered notification to affected customers and the persons served by the water system at the service connection and complied with the filter requirements after any disturbance of a service line known to contain or potentially containing lead in accordance with § 141.85(f) for the previous calendar year, or that the water system has not caused any disturbance of a service line known to contain or potentially contain lead, during the preceding year. The water system must also submit an example copy of the notification to the State. Water systems that are required to provide filters under § 141.85(f) must also report the number of sites with disturbances that require filters as specified under § 141.85(f) and number of filters provided.

(7) Annually by January 30, the water system must certify to the State that it conducted an outreach activity in accordance with § 141.85(h) when it does not meet the service line replacement rate as specified in § 141.84(d) for the previous calendar year. The water system must also submit a copy to the State of the outreach materials provided.

(8) Annually by January 30, the water system must certify to the State that it delivered the required distribution system and site assessment information and public education materials to the State and local health departments for the previous calendar year in accordance with § 141.85(i).

(9) No later than 60 days after a water system exceeds the lead action level for the second time in a rolling five-year period, the system must submit a filter plan to the State as specified in § 141.85(j)(3). Thereafter, a system is not required to resubmit a filter plan unless requested by the State or if the system has made updates to its plan.

(10) Every six months, specifically by January 30 and July 30, any water system that meets the criteria of multiple lead action level exceedances in § 141.85(j)(1) must:

(i) Certify compliance with the filter requirements in the previous six months (the previous July through December for January 30 reports and the previous January through June for July 30 reports) in accordance with § 141.85(j)(2) and report the number of filters provided; and

(ii) Certify that the water system completed a public outreach activity in the previous six months (the previous July through December for January 30 reports and the previous January through June for July 30 reports) in accordance with § 141.85(j)(4) and submit a copy of the public education materials provided to consumers.

(g) *Reporting of additional monitoring data.* (1) Any water system which collects more samples than the minimum required, must report the results to the State within the first 10 days following the end of the applicable monitoring period under §§ 141.86, 141.87, and 141.88 during which the samples are collected. This includes the monitoring data pertaining to distribution system and site assessment pursuant to §§ 141.82(j) and 141.86(b)(1)(iv).

(2) The system must certify to the State the number of customer refusals or non-responses for follow-up sampling under § 141.82(j)(2) it received and documentation explaining why it was unable to collect a follow-up sample, within the first 10 days following the end of the applicable tap monitoring period in which an individual sample exceeded the action level.

(h) *Reporting of 90th percentile lead and copper concentrations where the State calculates a water system's 90th percentile concentrations.* A water system is not required to report the 90th percentile lead and copper concentrations measured from all lead and copper tap water samples collected during each tap sampling period, as required by paragraph (a)(2)(iv) of this section if:

(1) The State has previously notified the water system that it will calculate the water system's 90th percentile lead and copper concentrations, based on the lead and copper tap results submitted pursuant to paragraph (h)(2)(i) of this section, and the water system provides the results of lead and copper tap water samples no later than 10 days after the end of the applicable tap sampling period; and

(2) The system has provided the following information to the State by the date specified in paragraph (h)(1) of this section:

(i) The results of all tap samples for lead and copper including the location of each site and the site selection criteria under § 141.86(a)(4) used as the basis for which the site was selected for the water system's sampling pool; and

(ii) An identification of sampling sites utilized during the current monitoring period that were not sampled during previous monitoring periods, and an explanation of why sampling sites have changed; and

(3) The State has provided the results of the 90th percentile lead and copper calculations, in writing, to the water system within 15 days of the end of the tap sampling period.

(i) *Reporting requirements for a community water system's public education and sampling in schools and child care facilities.* (1) A community water system must provide a list of the schools and child care facilities they serve, or provide certification that no schools or child care facilities are served, to the State by the compliance date in § 141.80(a)(3) in accordance with § 141.92(b)(1). A water system that certifies that no schools or child care facilities are served by the water system is not required to report the information in paragraphs (i)(2) and (3) of this section. Annually by January 30, beginning one year after the compliance date in § 141.80(a)(3), the system must certify that there are no schools or child care facilities served by the water system. When the system becomes aware of one or more schools or child care facilities that it serves, it must provide a list to the State and begin to report the information in paragraphs (i)(2) and (3) of this section.

(2) A community water system must report the lead analytical sampling results for schools and child care facilities within 30 days of receipt of the results in accordance with § 141.92(g)(1)(iii).

(3) Beginning one year after the compliance date in § 141.80(a)(3), a community water system must send a report to the State annually by January 30 for the previous year's activity as calculated from the compliance date in § 141.80(a)(3). The report must include the following:

(i) Certification that the water system made a good faith effort to identify schools and child care facilities in accordance with § 141.92(b). The good faith effort may include reviewing customer records and requesting lists of schools and child care facilities from the State or other licensing agency. If there are changes to the list of schools and child care facilities that a water system serves, an updated list must be submitted at least once every five years in accordance with § 141.92(b)(2). If there are no changes to the list of schools or child care facilities the water system serves, the water system must certify there are no changes to the list.

(ii) Certification that the water system has delivered information about health risks from lead in drinking water to the school and child care facilities that they serve in accordance with § 141.92(c)(1).

(iii) During the first five years after the compliance date in § 141.80(a)(3), certification that the water system has completed the notification and sampling requirements in § 141.92(c)(2)(i) and (d)(1) for elementary schools and child care facilities and the information in paragraphs (i)(3)(iii)(A) through (E) of this section.

(A) The number and names of schools and child care facilities served by the water system;

(B) The number and names of schools and child care facilities sampled in the previous year;

(C) The number and names of elementary schools and child care facilities that declined sampling;

(D) The number and names of elementary schools and child care facilities that did not respond to outreach attempts for sampling; and

(E) Information pertaining to outreach attempts for sampling that were declined or not responded to by the elementary school or child care facility.

(iv) During the first five years after the compliance date in § 141.80(a)(3), certification that the water system has completed the notification and sampling requirements of § 141.92(c)(2)(ii) and (e) for secondary schools and the information in paragraphs (i)(3)(iii)(A) and (B) of this section.

(v) Starting with the sixth year after the compliance date in § 141.80(a)(3), the water system must certify completion of the notification requirements of § 141.92(c)(3) and sampling requirements of § 141.92(d)(2) in elementary schools and child care facilities and § 141.92(e) for secondary schools and the information in paragraphs (i)(3)(iii)(A) and (B) of this section, thereafter.

(vi) Certification that sampling results were provided to schools, child care facilities, and local and State health departments.

(j) * * *

(1) Small water systems serving 3,300 or fewer and non-transient non-community water systems implementing the point-of-use device option under § 141.93(c)(1), must report the results from the tap sampling required under § 141.93(c)(1)(iv) no later than 10 days after the end of the tap sampling period. If corrective action is not completed within 30 days of a POU sample exceeding 0.010 mg/L, the system must provide documentation to the State within 30 days explaining why it was unable to correct the issue. Unless waived by the State, the water system must provide documentation to certify maintenance of the point-of-use devices.

(2) Small water systems serving 3,300 or fewer and non-transient non-community water systems implementing the small system compliance flexibility option to replace all lead-bearing plumbing under § 141.93(c)(2) must provide certification to the State that all lead-bearing material has been replaced on the schedule established by the State, within one year of designation of the option under § 141.93(c)(2).

■ 13. Revise § 141.92 to read as follows:

§ 141.92 Monitoring for lead in schools and child care facilities.

(a) *General requirements.* (1) All community water systems must conduct public education and lead monitoring at the schools and child care facilities they serve unless those schools or child care facilities:

(i) Were constructed or had full plumbing replacement on or after January 1, 2014, or the date the State adopted standards that meet the definition of lead free in accordance with section 1417 of the Safe Drinking Water Act, as amended by the Reduction of Lead in Drinking Water Act, whichever is earlier; and

(ii) Are not served by a lead, a galvanized requiring replacement, or an unknown service line.

(2) The provisions of this section do not apply to a school or child care facility that is regulated as a public water system.

(b) *List of schools and child care facilities.* (1) All community water systems must compile a list of schools and child care facilities they serve that meet the criteria of paragraph (a) of this section and submit the list to the State in accordance with § 141.90(i)(1) by the compliance date specified in § 141.80(a)(3).

(2) Within five years following the compliance date in § 141.80(a)(3) and at least once every five-year period after, all community water systems must either certify in writing to the State there have been no changes to the list of schools and child care facilities or submit a revised list to the State in accordance with § 141.90(i)(3)(i).

(c) *Public education to schools and child care facilities.* (1) At least once a year beginning with the compliance date in § 141.80(a)(3), community water systems must contact all schools and child care facilities identified by the system in paragraph (b) of this section to provide information about the health risks from lead in drinking water consistent with the content requirements of § 141.85(a)(1)(ii) through (iv) and (vi).

(2) Within the first five years following the compliance date in § 141.80(a)(3), community water systems must:

(i) Notify elementary schools and child care facilities, in accordance with the frequency requirements in paragraph (d)(1) of this section, that they are eligible to be sampled for lead by the water system. This notice must include:

(A) A proposed schedule for sampling at the facility; and

(B) Information about sampling for lead in schools and child care facilities (EPA's 3Ts for Reducing Lead in Drinking Water Toolkit, EPA–815–B–18–007, or subsequent EPA guidance).

(ii) Notify all secondary schools identified in paragraph (b) of this section at least once a year that they are eligible to be sampled for lead by the community water system on request. The notice must provide:

(A) Information on how to request sampling for lead at the facility; and

(B) Information about sampling for lead in schools and child care facilities (EPA's 3Ts for Reducing Lead in Drinking Water Toolkit, EPA–815–B–18–007, or subsequent EPA guidance).

(3) Starting with the sixth year after the compliance date in § 141.80(a)(3), a community water system must contact all elementary schools, secondary schools, and child care facilities identified in paragraph (b) of this section to notify them that they are eligible to be sampled for lead by the community water system on request and provide the information in paragraphs (c)(2)(ii)(A) and (B) of this section.

(4) Thirty days prior to any sampling event, community water systems must provide schools and child care facilities with instructions to identify outlets for lead sampling and prepare for a sampling event.

(d) *Frequency of sampling at elementary schools and child care facilities.* (1) Within the first five years following the compliance date in § 141.80(a)(3), community water systems must collect samples from at least 20 percent of the total of elementary schools served by the system per year and at least 20 percent of the total of child care facilities served by the system per year, or according to an alternative schedule approved by the State, until all elementary schools and child care facilities identified under paragraph (b) of this section have been sampled once or have declined to participate or are non-responsive.

(i) Community water systems must provide documentation to the State in accordance with § 141.90(i)(3)(iii)(D) and (E) if an elementary school or child care facility is non-responsive or otherwise declines to participate in the monitoring or education requirements of this section. For the purposes of this section:

(A) A community water system may consider an elementary school or child care facility non-responsive after the community water system makes at least two separate outreach attempts to contact the facility to schedule sampling and does not receive any response on either attempt; and

(B) A community water system may count a refusal or non-response from an elementary school or child care facility as part of the minimum 20 percent of elementary schools and child care facilities sampled per year.

(ii) [Reserved]

(2) Starting with the sixth year after the compliance date in § 141.80(a)(3), community water systems must conduct sampling as specified in paragraph (f) of this section when requested by an elementary school or child care facility.

(i) A community water system is not required under this paragraph (d)(2) to sample more than 20 percent of the elementary schools and child care facilities identified in paragraph (b) of this section in any given year. A community water system is not required under this paragraph (d)(2) to sample an individual elementary school or child care facility more than once in any five-year period.

(ii) [Reserved]

(3) The first time a water system includes an elementary school or child care facility in an update to the list of schools and child care facilities required to be submitted to the State in paragraph (b)(2) of this section, the water system must conduct outreach at those elementary schools and child care facilities as specified in paragraph (c)(2) of this section once prior to conducting sampling in accordance with paragraph (d)(2) of this section.

(i) A community water system may consider an elementary school or child care facility non-responsive after the community water system makes at least two separate outreach attempts to contact the facility to schedule sampling and does not receive any response on either attempt.

(ii) [Reserved]

(e) *Frequency of sampling at secondary schools.* (1) Starting with the compliance date in § 141.80(a)(3), community water systems must conduct sampling as specified in paragraph (f) of this section when requested by a secondary school.

(2) A community water system is not required under this paragraph (e) to sample more than 20 percent of the secondary schools identified in paragraph (b) of this section in any given year. A community water system is not required under this paragraph (e) to sample an individual secondary school more than once in any five-year period.

(f) *Lead sampling protocol for schools and child care facilities.* (1) Community water systems must collect five samples per school and two samples per child care facility at outlets typically used to provide water for human consumption. Except as provided in paragraphs (f)(1)(iii) through (v) of this section, the outlets cannot have point-of-use devices. The community water system must sample the following types and number of outlets:

(i) For schools, two drinking water fountains, one kitchen faucet used for drinking or cooking, one classroom faucet or other outlet used to provide water for human consumption, and one nurse's office faucet, as available.

(ii) For child care facilities, one drinking water fountain, and one of either a kitchen faucet used for drinking or cooking or one classroom faucet or other outlet used to provide water for human consumption.

(iii) If any school or child care facility has fewer than the required number of outlets, the community water system must sample all outlets used to provide water for human consumption.

(iv) The community water system may sample at outlets with point-of-use devices if the facility has point-of-use devices installed on all outlets typically used to provide water for human consumption of if the school or child care facility has fewer than the required number of outlets.

(v) If any school or child care facility does not contain the type of outlet listed in paragraphs (f)(1)(i) through (iv) of this section, the community water system must collect a sample from another outlet typically used to provide water for human consumption as identified by the facility, to meet the required number of samples as provided in this paragraph (f)(1).

(2) Community water systems must collect the samples from the cold water tap subject to the following additional requirements:

(i) Each sample for lead must be a first draw sample;

(ii) The sample must be 250 ml in volume;

(iii) The water must have remained stationary in the plumbing system of the sampling site (building) for at least 8 but no more than 18 hours; and

(iv) Samples must be analyzed using acidification and the corresponding analytical methods in § 141.89.

(3) Community water system, school, or child care facility staff, or other appropriately trained individuals must collect samples in accordance with paragraphs (f)(1) and (2) of this section.

(g) *Notification of results.* (1) Community water systems must provide sampling results, regardless of lead sample concentration, as soon as practicable but no later than 30 days after receipt of the results to:

(i) The sampled school or child care facility, along with information about potential options to remediate lead in drinking water (consistent with EPA's 3Ts for Reducing Lead in Drinking Water Toolkit, EPA–815–B–18–007, or subsequent EPA guidance);

(ii) The local and State health department; and

(iii) The State in accordance with § 141.90(i).

(2) [Reserved]

(h) *Alternative school and child care lead sampling programs.* (1) If schools and child care facilities served by a community water system are sampled for lead in drinking water under a State or local law or program, the State may exempt one or more community water system(s) from the sampling requirements of this section by issuing a written waiver:

(i) If the sampling meets the frequency requirements in paragraph (d) of this section for elementary schools and child care facilities and paragraph (e) of this section for secondary schools and the protocol requirements in paragraph (f) of this section; or

(ii) If the sampling meets the frequency requirements in paragraph (d) of this section for elementary schools and child care facilities and paragraph (e) of this section for secondary schools and the protocol requirements in paragraph (f) of this section with the exception of sample size and stagnation time in paragraphs (f)(2)(ii) and (iii) of this section and the sampling is conducted in addition to any of the following actions to remediate lead in drinking water:

(A) Disconnect affected fixtures;

(B) Replace affected fixtures with fixtures certified as lead free; and

(C) Install and maintain point-of-use devices certified by an American National Standards Institute accredited certifier to reduce lead levels; or

(iii) If the sampling is conducted in schools and child care facilities served by the community water system less frequently than once every five years

and that sampling is conducted in addition to any of the actions to remediate lead in drinking water specified in paragraph (h)(1)(ii) of this section; or

(iv) If the school or child care facility maintains point-of-use devices as defined in § 141.2 on all outlets used to provide water for human consumption; or

(v) If the sampling is conducted under a grant awarded under section 1464(d) of the SDWA, consistent with the requirements of the grant and at least the minimum number of samples required in paragraph (f) of this section are collected.

(2) The duration of the waiver cannot exceed the time period covered by the sampling and will automatically expire at the end of any 12-month period during which sampling is not conducted at the required number of schools or child care facilities.

(3) The State must only issue a waiver to the community water system for the subset of the schools or child care facilities served by the system as designated under paragraph (b) of this section that are sampled under an alternative program as described in paragraph (h)(1) of this section.

(4) The State may issue a written waiver applicable to more than one community water system (*e.g.,* one waiver for all community water systems subject to a statewide sampling program that meets the requirements of this paragraph (h)).

(5) The State may issue a waiver for community water systems to conduct the sampling requirements of this section for the first five years following the compliance date in § 141.80(a)(3) in the schools and child care facilities that were sampled for lead between January 1, 2021, and the compliance date in § 141.80(a)(3) that otherwise meets the requirements of paragraph (h)(1) of this section.

■ 14. Revise § 141.93 to read as follows:

§ 141.93 Small water system compliance flexibility.

Small community water systems serving 3,300 or fewer persons and all non-transient non-community water systems that exceed the lead action level, but do not exceed the copper action level, may elect to use this provision in lieu of the corrosion control treatment requirements otherwise applicable to small systems and non-transient non-community water systems in § 141.81(a)(3), if approved by the State. This compliance flexibility is not available to water systems where the State has obtained primacy for this subpart and the State does not adopt regulations to provide compliance flexibility consistent with this section.

(a) Small community water systems and non-transient non-community water systems that elect to use this section must:

(1) For water systems with corrosion control, collect water quality parameters in accordance with § 141.87 and, if the system has not re-optimized OCCT in accordance with § 141.81(d), evaluate compliance options in paragraphs (c)(1) and (2) of this section and corrosion control treatment under § 141.81(d)(1). Water systems with corrosion control treatment in place must continue to operate and maintain optimal corrosion control treatment until the State determines, in writing, that it is no longer necessary, and meet any requirements that the State determines to be appropriate before implementing a State approved alternative compliance option described in this section.

(2) For systems without corrosion control, collect water quality parameters in accordance with § 141.87 and, if the system has not installed OCCT in accordance with § 141.81(e), evaluate compliance options in paragraphs (c)(1) and (2) of this section and corrosion control treatment under § 141.81(e)(1).

(b) The system must make a compliance option recommendation to the State within six months of the end of the tap sampling period in which the lead action level exceedance occurred. Within six months of the recommendation by the water system, the State must approve or disapprove the recommendation. If the State disapproves the recommendation, the State may designate the other compliance alternative as an option for the system. If the State does not designate the other compliance alternative as an option for the system, the system must comply with the otherwise applicable corrosion control treatment requirements under § 141.81(d) for systems with corrosion control or § 141.81(e) for systems without corrosion control treatment. Water systems must follow the schedules in § 141.81(d) or (e), beginning with step 3 in § 141.81(d)(3) or (e)(3) unless the State specifies optimal corrosion control treatment pursuant to either § 141.81(d)(2) or (e)(2), as applicable. If the system fails to implement the approved alternative compliance option, or the State revokes approval for the alternative compliance option, then the system must follow the requirements for small and non-transient non-community water systems as described under § 141.81(a)(3).

(c)(1) *Alternative compliance option: point-of-use devices.* A water system that elects the compliance option in this paragraph (c)(1), must install, maintain, and monitor POU devices in each household and each building served by the water system.

(i)(A) A community water system must install a minimum of one POU device (at one tap) in every household and at every tap that is used for cooking and/or drinking in every non-residential building in its distribution system on a schedule specified by the State, but not to exceed one year after State approval.

(B) A non-transient non-community water system must provide a POU device to every tap that is used for cooking and/or drinking on a schedule specified by the State, but not to exceed three months.

(ii) The POU device must be independently certified by a third party to meet the American National Standards Institute standard applicable to the specific type of POU unit to reduce lead in drinking water.

(iii) The POU device must be maintained by the water system in accordance with the manufacturer's recommendations or on a more frequent schedule if required by the State to ensure continued effective filtration, including but not limited to changing filter cartridges and resolving any operational issues. The POU device must be equipped with mechanical warnings to ensure that consumers are automatically notified of operational problems. The water system must provide documentation to the State to certify maintenance of the POU devices, unless the State waives this requirement, in accordance with § 141.90(j)(1).

(iv) The water system must monitor, in accordance with this paragraph (c)(1)(iv), one-third of the POU devices each year and all POU devices must be monitored within a three-year cycle. First liter tap samples collected under this section must be taken after water passes through the POU device to assess its performance. Samples must be one liter in volume and have had a minimum 6-hour stagnation time. All samples must be at or below 0.010 mg/L. Water systems must report the results from the tap sampling no later than 10 days after the end of the tap sampling period in accordance with § 141.90(j)(1). If a sample exceeds 0.010 mg/L, the water system must notify the persons served by the POU device, and/or building management no later than one business day of receiving the tap sample results. The system must document and take corrective action at each site where the sample result exceeds the lead action level. Corrective action must be completed within 30 days. If the

corrective action is not completed within 30 days, the system must provide documentation to the State within 30 days explaining why it was unable to correct the issue.

(v) The water system must provide public education to consumers to inform them of proper use of POU devices.

(A) *Content.* All small community water systems serving 3,300 or fewer persons and non-transient non-community water systems that are approved to implement POU devices under this paragraph (c)(1) must provide public education materials to inform users how to properly use POU devices to maximize the units' effectiveness in reducing lead levels in drinking water. Public education materials must meet the requirements of § 141.85(a)(1)(ii) through (iv).

(B) *Timing.* Water systems must provide the public education materials at the time of POU device delivery.

(C) *Delivery.* Water systems must provide the public education materials in person, by mail, or by another method approved by the State, to persons at locations where the system has delivered POU devices.

(vi) The water system must operate and maintain the POU devices even if the system is at or below the action level in future tap monitoring periods until the system receives State approval to select the other compliance flexibility option or follow § 141.81(d) or (e) and the system has fully implemented it.

(2) *Alternative compliance option: replacement of lead-bearing plumbing.* A water system that has control over all plumbing in its buildings, and is not served by lead, galvanized requiring replacement, or unknown service lines, must replace all plumbing that does not meet the definition of ''lead free'' in section 1417 of the Safe Drinking Water Act, as amended by the Reduction of Lead in Drinking Water Act and any future amendments applicable at the time of replacement. The replacement of all lead-bearing plumbing must occur on a schedule established by the State but not to exceed one year. Water systems must provide certification to the State that all lead-bearing material has been replaced in accordance with § 141.90(j)(2).

■ 15. Amend § 141.152 by revising paragraph (a) to read as follows:

§ 141.152 Compliance dates.

(a) Between June 24, 2024, and December 31, 2026, community water systems must comply with 40 CFR 141.151 through 141.155 (except § 141.153(d)(4)(xii)), as codified on July 1, 2023. Beginning January 1, 2027, community water systems must comply with 40 CFR 141.151 through 141.156 (except § 141.153(8)(h)(i)), as codified on July 1, 2024. Beginning November 1, 2027, community water systems must comply with 40 CFR 141.151 through 141.156, as codified on July 1, 2025.

* * * * *

■ 16. Amend § 141.153 by revising paragraph (f)(3) and revising and republishing paragraph (h)(8) to read as follows:

§ 141.153 Content of the reports.

* * * * *

(f) * * *

(3) Lead and copper control requirements prescribed by subpart I of this part. For systems that fail to take one or more actions prescribed by §§ 141.80 through 141.93, the report must include the applicable language of appendix A to this subpart for lead, copper, or both.

* * * * *

(h) * * *

(8) Systems required to comply with subpart I of this part.

(i) The report must notify consumers that complete lead tap sampling data are available for review and must include information on how to access the data.

(ii) The report must include a statement that a service line inventory (including inventories where the publicly accessible inventory consists of a written statement that there are no lead, galvanized requiring replacement, or lead status unknown service lines, known lead connectors or connectors of unknown material) has been prepared and include instructions to access the publicly accessible service line inventory. If the service line inventory is available online, the report must include the direct link to the inventory.

(iii) For systems with lead, galvanized requiring replacement, or lead status unknown service lines in the system's inventory pursuant to § 141.84(a) and (b), the report must include information on how to obtain a copy of the service line replacement plan or a direct link to the plan if the system is required to make the service line replacement plan available online.

(iv) The report must contain a plainly worded explanation of the corrosion control efforts the system is taking in accordance with subpart I of this part. Corrosion control efforts consist of treatment (*e.g.,* pH adjustment, alkalinity adjustment, or corrosion inhibitor addition) and other efforts contributing to the control of the corrosivity of water (*e.g.,* monitoring to assess the corrosivity of water). The system may use one of the following templates or use their own explanation that includes equivalent information.

(A) For systems with State or EPA-designated Optimal Corrosion Control Treatment:

(*1*) Corrosion of pipes, plumbing fittings, and fixtures may cause lead and copper to enter drinking water. To assess corrosion of lead and copper, [name of system] conducts tap sampling for lead and copper at selected sites [insert frequency at which system conducts tap sampling]. [Name of system] treats water using [identify treatment method] to control corrosion, which was designated as the optimal corrosion control treatment by [the State or EPA, as applicable]. To ensure the treatment is operating effectively, [name of system] monitors water quality parameters set by the [the State or EPA, as applicable] [insert frequency at which system conducts water quality parameter monitoring].

(*2*) If applicable add: [Name of system] is currently conducting a study of corrosion control to determine if any changes to treatment methods are needed to minimize the corrosivity of the water.

(B) For systems without State or EPA designated Optimal Corrosion Control Treatment:

(*1*) Corrosion of pipes, plumbing fittings and fixtures may cause metals, including lead and copper, to enter drinking water. To assess corrosion of lead and copper, [name of system] conducts tap sampling for lead and copper at selected sites [insert frequency at which system conducts tap sampling].

(*2*) If applicable, add: [Name of system] treats water using [identify treatment method] to control corrosion.

(*3*) If applicable add: [Name of system] is currently conducting a study of corrosion control to determine if any changes to treatment methods are needed to minimize the corrosivity of the water.

(v) The report must include a statement that the water system is required to sample for lead in schools and licensed child care facilities as requested by the facility and that directs the public to contact their school or child care facility for further information about potential sampling results.

■ 17. Amend § 141.154 by revising paragraph (d)(1) to read as follows:

§ 141.154 Required additional health information.

* * * * *

(d) * * *

(1) A short informational statement about lead in drinking water and its

effects on children. The statement must include the information in figure 1 to this paragraph (d)(1):

Figure 1 to Paragraph (d)(1)

Lead can cause serious health effects in people of all ages, especially pregnant people, infants (both formula-fed and breastfed), and young children. Lead in drinking water is primarily from materials and parts used in service lines and in home plumbing. [INSERT NAME OF SYSTEM] is responsible for providing high quality drinking water and removing lead pipes but cannot control the variety of materials used in the plumbing in your home. Because lead levels may vary over time, lead exposure is possible even when your tap sampling results do not detect lead at one point in time. You can help protect yourself and your family by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Using a filter, certified by an American National Standards Institute accredited certifier to reduce lead, is effective in reducing lead exposures. Follow the instructions provided with the filter to ensure the filter is used properly. Use only cold water for drinking, cooking, and making baby formula. Boiling water does not remove lead from water. Before using tap water for drinking, cooking, or making baby formula, flush your pipes for several minutes. You can do this by running your tap, taking a shower, doing laundry or a load of dishes. If you have a lead service line or galvanized requiring replacement service line, you may need to flush your pipes for a longer period. If you are concerned about lead in your water and wish to have your water tested, contact [INSERT NAME OF SYSTEM and CONTACT INFORMATION]. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at *https://www.epa.gov/safewater/lead.*

* * * * *

■ 18. Amend appendix A to subpart O of part 141 under the heading ''Inorganic contaminants'' by removing the entry for ''Lead'' and adding the entry ''Lead (mg/L)'' in its place to read as follows:

Appendix A to Subpart O of Part 141—Regulated Contaminants

Contaminant (units)	Traditional MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
*	*	*	*	*	*	*
Inorganic contaminants						
*	*	*	*	*	*	*
Lead (mg/L)	AL = 0.010	1,000	AL = 10 ...	0	Corrosion of household plumbing systems and service lines connecting buildings to water mains, erosion of natural deposits.	There is no safe level of lead in drinking water. Exposure to lead in drinking water can cause serious health effects in all age groups, especially pregnant people, infants (both formula-fed and breastfed), and young children. Some of the health effects to infants and children include decreases in IQ and attention span. Lead exposure can also result in new or worsened learning and behavior problems. The children of persons who are exposed to lead before or during pregnancy may be at increased risk of these harmful health effects. Adults have increased risks of heart disease, high blood pressure, kidney or nervous system problems. Contact your health care provider for more information about your risks.
*	*	*	*	*	*	*

* * * * *

■ 19. Amend § 141.202 by revising paragraph (b)(1) to read as follows:

§ 141.202 Tier 1 Public Notice—Form, manner, and frequency of notice.

* * * * *

(b) * * *

(1) Provide a public notice as soon as practical but no later than 24 hours after the system learns of the violation or situation requiring Tier 1 public notice;

* * * * *

■ 20. Amend appendix A to subpart Q of part 141 in section I by revising the entry ''1. Lead and Copper Rule (TT)'' under the heading ''C. Lead and Copper Rule (Action Level for lead is 0.015 mg/L, for copper is 1.3 mg/L)'' to read as follows:

Appendix A to Subpart Q of Part 141—NPDWR Violations and Other Situations Requiring Public Notice [1]

Contaminant	MCL/MRDL/TT violations [2]		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
I. * * *				
C. Lead and Copper Rule (Action Level for lead is 0.010 mg/L, for copper is 1.3 mg/L).				
1. Lead and Copper Rule (TT)	2	141.80 (except paragraph (c)) through 141.84, 141.85(a) through (c) (except paragraphs (c)(3)), (h), and (j), and 141.93.	3	141.86 through 141.90, 141.92.
* *	*	*	*	*

Appendix A—Endnotes

* * * * *

1. Violations and other situations not listed in this table (*e.g.,* failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the primacy agency. Primacy agencies may, at their option, also require a more stringent public notice tier (*e.g.,* Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Appendix, as authorized under § 141.202(a) and § 141.203(a).

2. MCL—Maximum contaminant level, MRDL—Maximum residual disinfectant level, TT—Treatment technique

* * * * *

■ 21. Amend appendix B to subpart Q of part 141 by revising the entry for ''23. Lead'' under the heading ''D. Lead and Copper Rule'' and endnote 13 to read as follows:

Appendix B to Subpart Q of Part 141—Standard Health Effects Language for Public Notification

Contaminant	MCLG [1] mg/L	MCL [2] mg/L	Standard health effects language for public notification
National Primary Drinking Water Regulations (NPDWR)			
*	*	*	* * * *
D. Lead and Copper Rule			
23. Lead	zero	TT [13]	There is no safe level of lead in drinking water. Exposure to lead in drinking water can cause serious health effects in all age groups, especially pregnant people, infants (both formula-fed and breastfed), and young children. Some of the health effects to infants and children include decreases in IQ and attention span. Lead exposure can also result in new or worsened learning and behavior problems. The children of persons who are exposed to lead before or during pregnancy may be at increased risk of these harmful health effects. Adults have increased risks of heart disease, high blood pressure, kidney or nervous system problems. Contact your health care provider for more information about your risks.
*	*	*	* * * *

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Appendix B—Endnotes

* * * * *

1. MCLG—Maximum contaminant level goal
2. MCL—Maximum contaminant level

* * * * *

13. Action Level = 0.010 mg/L

* * * * *

PART 142—NATIONAL PRIMARY DRINKING WATER REGULATIONS IMPLEMENTATION

■ 22. The authority citation for part 142 continues to read as follows:

Authority: 42 U.S.C. 300f, 300g–1, 300g–2, 300g–3, 300g–4, 300g–5, 300g–6, 300j–4, 300j–9, and 300j–11.

■ 23. Amend § 142.14 by revising paragraphs (d)(8) and (9) and (d)(10)(ii) to read as follows:

§ 142.14 Records kept by States.

* * * * *

(d) * * *

(8) Records of the currently applicable or most recent State determinations, including all supporting information and an explanation of the technical basis for each decision, made under the provisions of 40 CFR part 141, subpart I, listed in paragraphs (d)(8)(i) through (xix) of this section for the control of lead and copper. For the records identified in paragraphs (d)(8)(i) through (xix), if no change is made to State determinations during a 12-year retention period, the State must retain the record until a new decision, determination, or designation has been issued.

(i) Section 141.81(b)—for any water system deemed to be optimized under § 141.81(b) of this chapter, any conditions imposed by the State on specific water systems to ensure the continued operation and maintenance of corrosion control treatment in place;

(ii) Sections 141.81(b)(4) and (h) and 141.86(c)(2)(iii)(G) and (g)(4)(iii)—determinations of additional monitoring requirements and/or other actions required to maintain optimal corrosion control by systems that change treatment or add a new source of water;

(iii) Section 141.82(b)—decisions to require a water system to conduct corrosion control treatment studies;

(iv) Section 141.82(d)—designations of optimal corrosion control treatment and any simultaneous compliance considerations that factored into the designation;

(v) Section 141.82(f)—designations of optimal water quality parameters;

(vi) Section 141.83(b)(2)—determinations of source water treatment;

(vii) Section 141.83(b)(4)—designations of maximum permissible concentrations of lead and copper in source water;

(viii) Section 141.84(d)(5)(v)—determinations as to whether a shortened replacement deadline and associated replacement rate is feasible for mandatory full lead and galvanized requiring replacement service line replacement;

(ix) Section 141.84(d)(5)(vi)—for every system using a deferred deadline and associated replacement rate for their mandatory service line replacement program as defined in § 141.84(d)(5)(vi) of this chapter, every written determination as to whether a shorter deadline is feasible, either by approving continued use of the identified deferred deadline and rate or by setting a shorter deadline and faster replacement rate, including those made by the end of the second program year, and subsequent determinations every three years thereafter;

(x) Section 141.85—system-specific decisions regarding the content of written public education materials and/or the distribution of these materials;

(xi) Section 141.86(b)(3)—system-specific determinations regarding use of samples that do not meet the six hour minimum stagnation time at non-transient non-community water systems, and community water systems meeting the criteria of § 141.85(b)(8) of this chapter, that operate 24 hours a day;

(xii) Section 141.86(d)—system-specific designations of sampling locations for systems subject to reduced monitoring;

(xiii) Section 141.86(d)(3)—system-specific determinations pertaining to alternative sample collection periods for systems subject to reduced monitoring;

(xiv) Section 141.86(g)—determinations of small system monitoring waivers, waiver recertifications, and waiver revocations;

(xv) Section 141.87(b)(3)(ii)—determinations regarding representative entry point locations at ground water systems;

(xvi) Sections 141.81(h) and 141.90(a)(4)—evaluation and approval of water system source water or long-term treatment changes;

(xvii) Sections 141.90(e)(6) and (12)—system-specific determinations regarding the submission of information to demonstrate compliance with partial lead and galvanized requiring replacement service line replacement requirements;

(xviii) Section 141.90(f)—system-specific decisions regarding the resubmission of detailed documentation demonstrating completion of public education requirements, including resubmission of filter plans under § 141.90(f)(9) of this chapter; and

(xix) Section 141.93—identification of community water systems and non-transient non-community water systems utilizing the compliance alternatives, and the compliance alternative selected by the water system and the compliance option approved by the State.

(9) Records of reports and any other information submitted by PWSs under § 141.90 of this chapter, including:

(i) Records of any 90th percentile values calculated by the State under § 141.90(h) of this chapter;

(ii) Completed initial service line inventories, baseline inventories, and required updates to inventories and information under § 141.90(e) of this chapter;

(iii) Service line replacement plans under § 141.90(e)(3) of this chapter and any updates to the plan under § 141.90(e)(4) of this chapter; and

(iv) Compliance sampling pools in site sample plan and any changes to sampling pools under § 141.90(a)(1) of this chapter.

(10) * * *

(ii) Verify compliance with the requirements related to partial or customer-initiated lead and galvanized requiring replacement service line replacement under § 141.84(f), (g), and (h)(1) and (2), compliance with full service line replacement under § 141.84(h)(3) of this chapter, and compliance with lead connector replacement when encountered under § 141.84(e) of this chapter; and

* * * * *

■ 24. Amend § 142.15 by revising and republishing paragraph (c)(4) to read as follows:

§ 142.15 Reports by States.

* * * * *

(c) * * *

(4) *Timing.* States must report quarterly, with the exception of the requirements in paragraphs (c)(4)(iii)(G) and (H) of this section, in a format and on a schedule prescribed by the Administrator, the following information related to each system's compliance with the treatment techniques for lead and copper under 40 CFR part 141, subpart I, during the preceding calendar quarter. Specifically, States must report as follows:

(i) through (ii) [Reserved]

(iii) States must report the PWS identification number of each water system identified in paragraphs (c)(4)(iii)(A) through (H) of this section.

(A) For each public water system, regardless of size, all 90th percentile lead levels calculated during each tap sampling period specified in § 141.86 of this chapter, and the first and last days of the tap sampling period for which the 90th percentile lead level was calculated.

(B) For each water system, regardless of size, the 90th percentile copper level calculated during each tap sampling period specified in § 141.86 of this chapter, in which the system exceeds the copper action level, and the first and last days of each tap sampling period in which an exceedance occurred.

(C) For each water system for which the State has designated optimal water quality parameters under § 141.82(f) of this chapter, the specific corrosion control treatment designated, the date of the determination, and the paragraph(s) under § 141.82(f) which the State made its determination, the water system's optimal water quality parameters.

(D) For each water system the total number of lead service lines, galvanized requiring replacement service lines, lead status unknown service lines, non-lead service lines, lead connectors, and connectors of unknown material in its inventory, reported separately.

(E) For each water system required to conduct mandatory replacement of lead and galvanized requiring replacement service lines as specified in § 141.84(d) of this chapter, the total number and type of service lines replaced, the applicable deadline for the system to complete replacement of all lead and galvanized requiring replacement service lines, and the expected date of completion of mandatory service line replacement.

(F) For each water system that has implemented optimal corrosion control pursuant to § 141.82 of this chapter, completed applicable source water treatment requirements pursuant to § 141.83 of this chapter, and/or completed mandatory service line

replacement requirements pursuant to § 141.84(d) of this chapter, and the date of the State's determination that these requirements have been met. The date reported must be the latest of the following events:

(*1*) The date the State received the results of corrosion control evaluations under § 141.82(d) or (e) of this chapter or optimal corrosion control treatment recommendation by the system;

(*2*) For systems for which the State has designated optimal corrosion control treatment or re-optimized optimal corrosion control treatment under § 141.82(d) of this chapter, the date of the determination and the date the system completed installation of treatment as certified under § 141.90(c)(4) of this chapter;

(*3*) The date the State designates optimal water quality parameters under § 141.82(f) of this chapter or deems the system to have optimized corrosion control pursuant to § 141.81(b)(1) or (3) of this chapter;

(*4*) For systems which the State has required to install source water treatment under § 141.83(b)(2) of this chapter, the date of the determination, the date the State designates maximum permissible source water levels under § 141.83(b)(4) of this chapter or determines pursuant to § 141.83(b)(2) that source water treatment is not required; or

(*5*) For systems required to conduct mandatory service line replacement, the date the system completes mandatory service line replacement pursuant to § 141.84(d) of this chapter.

(*6*) For systems not required to complete the corrosion control treatment steps under § 141.81(f) of this chapter, the date the system is required to complete mandatory service line replacement pursuant to § 141.84(d) of this chapter.

(G) Each State which has primary enforcement responsibility must submit to the Administrator the 90th percentile lead concentration calculated during each tap sampling period in which the system exceeds the lead action level in § 141.80(c)(1) of this chapter within the first 15 days following the end of each tap sampling period specified in § 141.86 of this chapter or 24 hours of receiving notification of an action level exceedance, whichever is earlier.

(H) For each water system that is eligible for and plans to use a deferred deadline and associated replacement rate for their mandatory service line replacement program as described in § 141.84(d)(5)(vi) of this chapter, as soon as practicable, but no later than the end of second program year of mandatory service line replacement as defined in § 141.84(d)(5)(iii) of this chapter, and every three program years thereafter, the result of the State's written determination as to whether the deferred deadline and associated replacement rate are the fastest feasible, the number of years and months needed to complete mandatory service line replacement, the date of completion of mandatory service line replacement at the fastest feasible rate, and the reasons for the State's determination.

* * * * *

■ 25. Amend § 142.16 by revising paragraphs (d)(1)(ii) and (d)(3) through (10) and adding paragraphs (d)(11) through (13) to read as follows:

§ 142.16 Special primacy requirements.

* * * * *

(d) * * *

(1) * * *

(ii) Section 141.82(g)—designating an alternative approach for aggregating multiple measurements collected during the same day for a water quality parameter at a sampling location, if the State elects to adopt a formula other than the one specified in § 141.82(g)(2)(i) of this chapter.

* * * * *

(3) Section 141.90(e)—verifying compliance with service line replacement schedules and completion of all partial lead and galvanized requiring replacement service line replacement activities.

(4) Section 141.86(d)(3)(i)—designating an alternative period for sample collection for community water systems subject to reduced monitoring.

(5) Section 141.84(b) as follows—

(i) Providing or requiring the review of any evidence-based resource, information, or identification method for the development of the baseline inventory or inventory updates. Requiring water systems whose inventories contain no lead, galvanized requiring replacement, or lead status unknown service lines, no known lead connectors, and no connectors of unknown material to prepare an updated inventory on a schedule determined by the State if the system subsequently finds a lead service line, galvanized requiring replacement service line, or lead connector within its system.

(ii) Providing or requiring the review of inventory validations described in § 141.84(b) of this chapter, including making determinations on whether previous inventory validations are at least as stringent as the requirements specified in § 141.84(b)(5)(i) through (iii) of this chapter and providing written approval to the system, and requiring additional actions for systems based on the results of the inventory validations.

(6) Section 141.84(d)(5)(v)—determining whether a shortened service line replacement deadline is feasible for mandatory lead and galvanized requiring replacement service line replacement and notifying the system of the determination in writing at any time throughout a system's replacement program. For systems required to replace service lines in accordance with a shortened deadline, or for systems eligible for a deferred deadline, determining the deadline to complete inventory validation in accordance with § 141.84(b)(5) of this chapter.

(7) Section 141.82—verifying compliance with Distribution System and Site Assessment requirements in accordance with § 141.82(j) of this chapter.

(8) Section 141.84(d)—identifying State laws, including statutes and constitutional provisions, that pertain to a water system's access to conduct full service line replacement and notifying water systems in writing whether such laws exist or not by the compliance date specified in § 141.80(a) of this chapter and within six months of the enactment of new or revised State law that pertains to a water system's access to conduct full service line replacement.

(9) Section 141.84(d)(5)(vi)—making determinations in writing about systems using deferred deadlines, including reviewing the systems' eligibility calculation and information on deferred deadlines provided in the service line replacement plans as described in § 141.84(c)(1)(x) of this chapter, determining whether the deferred deadline and associated cumulative average replacement rate are the fastest feasible or setting a new deferred deadline and replacement rate at the fastest feasible for the system, and reporting the results of these determinations to EPA as described in § 142.15(c)(4)(H).

(10) Section 141.85(b)(1)—making determinations about which water systems serve a large proportion of consumers with limited English proficiency and providing technical assistance to those systems in meeting the requirement of § 141.85(b)(1) of this chapter to either translate a copy of the public education materials or provide translation assistance to consumers with limited English proficiency. Examples of technical assistance include providing water systems with contact information for inclusion in the system's public education materials where consumers can contact the State

for translation assistance upon request, or providing resources for water systems to translate their public education materials, including EPA-provided translations of required content for public education materials (*e.g.,* health effects language, definitions) and translated templates through a website.

(11) Section 141.88 and 141.81(h)—reviewing any change in source water or treatment and making related determinations, including approval; establishment of additional requirements to ensure the system will operate and maintain optimal corrosion control treatment; and an evaluation of how this change may impact compliance with other National Primary Drinking Water Regulations in part 141 of this chapter.

(12) Section 141.92—reviewing lists of schools and child care facilities to ensure entries conform to the definitions of school and child care facility as defined in § 141.2 of this chapter and is complete.

(13) Section 141.92—determining whether any existing State or local testing program for schools and child care facilities is at least as stringent as the Federal requirements, including how the State will use the definitions of elementary school, secondary school, and child care facility as defined in § 141.2 of this chapter to issue waivers.

* * * * *

■ 26. In § 142.19, revise paragraph (a) introductory text and paragraph (a)(2) to read as follows:

§ 142.19 EPA review of State implementation of national primary drinking water regulations for lead and copper.

(a) Pursuant to the procedures in this section, the Regional Administrator may review State determinations establishing corrosion control or source water treatment requirements for lead or copper and may issue an order establishing Federal treatment requirements for a public water system pursuant to §§ 141.82(d), (f) and (h) and 141.83(b)(2) and (4) of this chapter where the Regional Administrator finds that:

* * * * *

(2) A State has abused its discretion; or

* * * * *

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