Drinking Water Update – PFAS and Pb-Cu Rules

February 18, 2025

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Draft NC Rule

15A NCAC 18C .1540 is proposed for adoption as follows:

15A NCAC 18C .1540 CONTROL OF PER- AND POLYFLUOROALKYL SUBSTANCES

The provisions of 40 C.F.R. 141, Subpart Z – Control of Per- and Polyfluoroalkyl Substances (PFAS) are hereby incorporated by reference including any subsequent amendments and editions. Copies are available for public inspection as set forth in Rule .0102(a) and (b) of this Subchapter.

History Note: Authority G.S. 130A-315; 130A-320(c); P.L. 93-523; 40 C.F.R. 141 8 Eff. [Month Day, Year. TBD]

NC Public Drinking Water Systems Impacted by the PFAS Rule

All NC Community Water Systems (CWSs) and Non-Transient Non-Community Water Systems (NTNCWSs) with their own source will be affected by the new PFAS rule (April 2024).

Category	Number of Systems
Total Number of Water Systems Affected	1,958
CWSs	1,648
NTNCWSs	310
Groundwater (GW) Systems	1,789
Surface Water (SW) Systems*	169

*Includes surface water purchase systems with their own source and Groundwater Under the Direct Influence of Surface Water (GWUDI) systems.

Final Rule MCLs and HI

Five Maximum Contaminants Levels (MCLs) for five individual PFAS and the Hazard Index (HI).

Chemical	Maximum Contaminant Level Goal (MCLG)	Maximum Contaminant Level (MCL)
PFOA	0	4.0 ppt
PFOS	0	4.0 ppt
PFHxS	10 ppt	10 ppt
HFPO-DA (GenX chemicals)	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
Mixture of two or more: PFHxS, PFNA, HFPO-DA, and PFBS	Hazard Index of 1	Hazard Index of 1

Compliance determined by running annual averages at each entry point.

Hazard Index

The Hazard Index (HI) is a long-established approach that the EPA regularly uses, for example in the Superfund program.

- To determine the health concerns associated with exposures to chemical mixtures.
- It is calculated by adding the ratio of the water sample concentration to a Health Based Water Concentration.
- A HI greater than 1 requires a system to take action.
- To be considered an exceedance, the HI has to be a *mixture* of a minimum of two contaminants.

$$HI\ MCL = \left(\frac{[HFPO\text{-}DA_{water}]}{[10\ ppt]}\right) + \left(\frac{[PFBS_{water}]}{[2000\ ppt]}\right) + \left(\frac{[PFNA_{water}]}{[10\ ppt]}\right) + \left(\frac{[PFHxS_{water}]}{[10\ ppt]}\right) = 1$$

MCL Calculation and Return to Compliance

- MCLs are based on an annual average calculated on a rolling basis (running annual average)

$$RAA = \frac{Q3_{2027} + Q4_{2027} + Q1_{2028} + Q2_{2028}}{4}$$

- Each time a new sample is collected, the system will return to compliance if the newly calculated RAA goes back below the MCL and/or HI.

PFAS Rule Implementation

Under the final PFAS Rule requirements, a public water system must:

- Conduct initial and ongoing compliance monitoring for the six regulated PFAS compounds.
- Implement solutions to reduce regulated PFAS in their drinking water if levels exceed the MCLs.
- Inform the public of the levels of regulated PFAS measured in their drinking water and if one or more MCLs are exceeded.
- Take samples at all entry points to the distribution system.
- Sample at an entry point to the distribution system “during periods of representative operating conditions”.

PFAS Initial Sampling Requirements

- Public water systems must initially monitor quarterly or bi-annually prior to April 26, 2027.
- Public water systems must conduct initial monitoring at each entry point to determine their compliance monitoring schedule.

Quarterly Samples

- Groundwater CWS and NTNCWS > 10,000 persons and all surface water CWS and NTNCWS.
- Must take four consecutive samples two to four months apart within a 12-month period (quarterly samples).

Bi-Annual Samples

- Groundwater CWS and NTNCWS ≤ 10,000 persons.
- Two samples five to seven months apart within a 12-month period.

PFAS Initial Monitoring Requirements

Under the final PFAS Rule requirements, a PWS system must:

- Conduct PN (public notice) and include PFAS information in the CCR (Consumer Confidence Report) by the CCR report deadline
- Report the results of initial monitoring to the State by April 26, 2027
- Following initial monitoring, beginning April 26, 2027 conduct compliance monitoring at frequency based on initial monitoring results
- That means either they will be:
  - Standard monitoring schedule
  - Reduced monitoring schedule
- Comply with MCLs by April 26, 2029

PFAS Initial Sampling Results

Compound	Trigger Level (ppt) – ½ MCLs
PFOA	2.0
PFOS	2.0
PFHxS	5
HHFPO-DA (GenX)	5
PFNA	5
PFBS	N/A
HI	0.5 (unitless)

Quarterly Monitoring – If ANY initial sampling result at the Entry Point > trigger level

Triennial Monitoring - If ALL initial sampling results at an Entry Point < trigger levels

Each Entry Point can be on its' own schedule.

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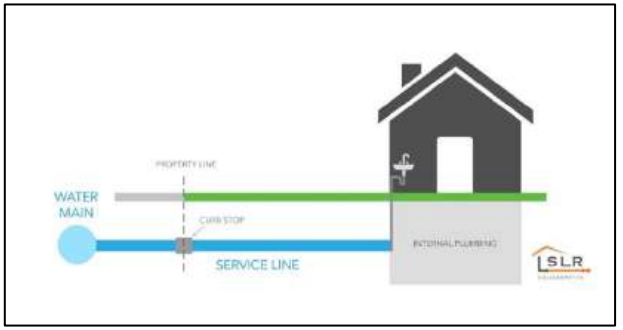
Key PFAS Rule Effective Dates

Requirement	Effective Date
Meet the analytical requirements. (Initial monitoring samples must be collected in accordance with approved methods.)	June 25, 2024
Report the results of initial monitoring to the State	April 26, 2027
Meet the compliance monitoring requirements	April 26, 2027
Consumer confidence report and public notification requirements	April 26, 2027
Meet the MCL compliance requirements	April 26, 2029

Status of Lead and Copper Rule Revisions
Lead and Copper Rule Improvements and Occurrence of Lead Service Lines in NC

Overview



- Lead and Copper Rule Revisions (LCRR)
- Initial Service Line Inventory Submittal Updates
- Service Line Material Notice Submittal Updates
- Updates on Technical Assistance Efforts and Outreach
- Lead and Copper Rule Improvements (LCRI)
- Baseline Service Line Inventory
- Service Line Replacement Plan

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Lead and Copper Rule Revisions (LCRR)

- The LCRR was published to the Federal Register on January 15, 2021.

- The compliance date for the rule was originally set for January 16, 2024, but this was later extended to October 16, 2024.

- A majority of the rule was replaced by the Lead and Copper Rule Improvements (LCRI) that was published to the Federal Register on October 30, 2024. However, three major portions of the LCRR remained unchanged in the LCRI and came into effect on October 16, 2024.

Lead and Copper Rule Revisions (LCRR)

1. Initial Service Line Inventory
   - All water systems subject to the LCRR were required to submit an inventory of the material of all their service lines (Lead, Galvanized Requiring Replacement, Unknown, and Non-Lead) by October 16, 2024.

2. Service Line Material Notice
   - All water systems subject to the LCRR were required to provide initial notification to customers of their service line material type (Lead, Galvanized Requiring Replacement, and Unknown) within 30 days of inventory completion deadline (November 15, 2024).

3. 24-Hour Public Notification of Lead Action Level Exceedance
   - All water systems subject to the LCRR are required to provide notification to all customers within 24 hours of the system learning of a 90th percentile lead action level exceedance (0.015 mg/L or 15 ppb), starting October 16, 2024.

Initial Service Line Inventory (SLI) Updates

- Total Required: **2,373**
- Total Received: **2,257**
- Missing: **116**

Service Line Material Type Counts

- Total Number of Service Lines Reported: **3,606,324** (2,257 systems)
    - Lead: **306** (38 systems)
    - Galvanized Requiring Replacement: **12,546** (150 systems)
    - Unknown: **789,659** (806 systems)
    - Non-Lead: **2,803,813** (2,170 systems)

Initial Service Line Inventory (SLI) Updates

- **90** water systems reported all their service lines as unknown material*
- Three water systems had a lead service line count great than 50*
- **% of Service Lines by Material Type**
  - **77.75%** Non-Lead
  - **21.90%** Unknown
  - **0.35%** Galvanized Requiring Replacement
  - **0.01%** Lead

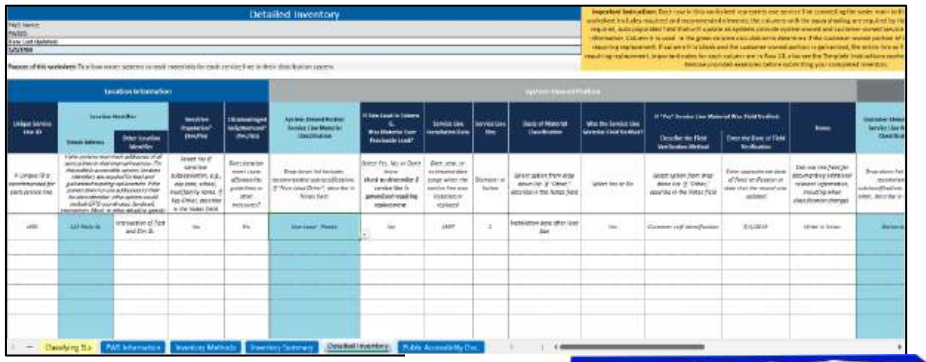
*as of 2/14/2025

Service Line Material Notices (SLMN) Updates

- **2,257** water systems have submitted an Initial SLI
- **1,418** water systems reported all non-lead service lines and are not required to provide SLMNs to customers.
- **151** water systems have submitted a certified copy of their SLMNs.
- **688** water systems still need to submit a certified copy of their SLMNs by July 1, 2025.

Technical Assistance Efforts and Outreach

- Public Water Supply (PWS) Section staff presented at multiple workshops across the state in 2023 and 2024.
- PWS Section staff also sent several rounds of Initial Service Line Inventory and Service Line Material Notice reminder emails to all water systems subject to the rule.
- BIL Lead Service Line Replacement funds were used to execute three-year contracts with three technical assistance providers to help water systems meet LCRR requirements.
- Technical assistance providers have assisted assigned systems with the following:
  - Development of the Initial SLIs
  - Submittal of the Initial SLIs
  - Development of Required SLMNs
  - Mailing of the SLMNs



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Lead and Copper Rule Improvements (LCRI)

- The LCRI was published to the Federal Register on October 30, 2024.
- The compliance date for the rule is set for November 1, 2027.
- Includes requirements for an updated "Baseline" SLI and development of a Service Line Replacement Plan.
- New Lead Action Level.
- New sampling requirements.

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Baseline Service Line Inventory (SLI)

- In addition to service line materials, systems will now need to review information describing **connector materials and locations**.
- Systems must add each identified connector to their existing inventory to create and submit their Baseline SLI by **November 1, 2027**.
- Connector material categories include:
  - Lead
  - Non-Lead
  - Unknown
  - No Connector Present

- The Baseline SLI must be made publicly available (same as Initial SLI)

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Baseline Service Line Inventory (SLI)

The inventory must be updated annually following submission of the Baseline SLI.

Systems must respond to customer inquiries on incorrect material categorizations within 30 days.

All systems must identify the material of all lead status unknown service lines by November 1, 2037.

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Service Line Replacement Plan

- Systems with one or more lead, galvanized requiring replacement (GRR), or lead status unknown service line must create a service line replacement plan by November 1, 2027. Required elements of the plan include:
    1. A description of a strategy to identify the material composition of all unknown service lines in the inventory.
    2. A standard operating procedure for conducting full service line replacement.
    3. A communication strategy for informing 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 a disturbance of a lead, GRR, or unknown service lines or following full or partial replacement.
    5. A strategy to prioritize service line replacement based on factors such as known lead and GRR service lines and community-specific factors.
    6. A funding strategy for conducting service line replacement that includes ways to accommodate customers that are unable to pay to replace the portion of the service line they own.

Service Line Replacement Plan

7. A communication strategy to inform both consumers and customers served by the water system about the replacement plan and program.
8. Identification of any laws, regulations, and/or water tariff agreements that affect the water system's ability to gain access to conduct full replacement.
9. For water systems that identify any lead-lined galvanized service lines in the inventory, a strategy to determine the extent of their use in the distribution system.

- Replacement plan must be made publicly accessible.
- Replacement plans must be updated annually to include new or updated information.

Service Line Replacement Plan

- Mandatory Full Service Line Replacement
  - Water systems must replace all lead and GRR service lines “under their control” by November 1, 2037.
  - If the water system does not have control of the service line, document why, citing any specific laws, regulations, or tariffs.
  - Where owner consent is required, the water system must make a “reasonable effort” to obtain consent.
  - Minimum Average Annual Replacement Rate (only counts full service line replacements)
    - At least 10% per year over a rolling 3-year period.

- Replacement pool = Lead + GRR + Unknown

Service Line Replacement Plan

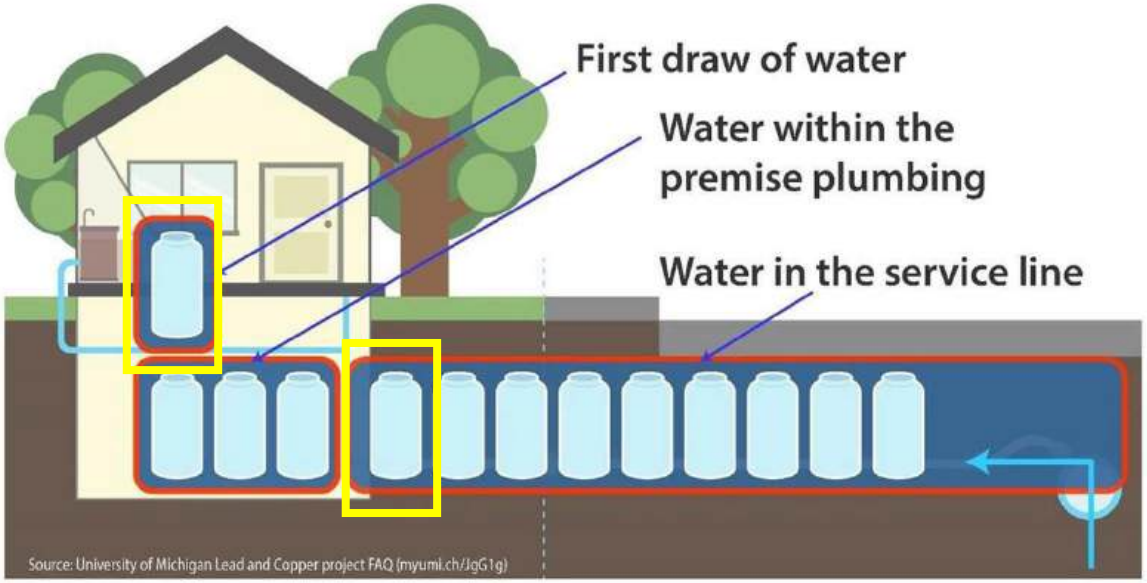
- Replacement of Lead Connectors
  - Must replace when encountered unless the connector is not under the water system's control.
- Customer-Requested Replacements
  - If a customer notifies that they intend to replace their portion of a service line, then the water system must replace their portion ASAP after the customer replaces, but no later than 45 days.
    - If the system fails to meet this deadline, then it must notify the State within 30 days and complete the replacement no later than 180 days after customer replacement.
  - If a customer notifies that they replaced their portion of a service line in the previous 6 months, the system must replace any remaining portion within 45 days of the awareness date.
  - If a customer replacement occurred more than 6 months in the past, the water system is not required to replace its portion but is required to update the inventory.

Monitoring Requirements – What's new?

- Lead Action Level: 0.010 mg/L (10 ppb) [reduced from 0.015 mg/L]
- Tier Sites:
  - Tier 1 – single family homes with premise plumbing made of lead and/or served by a lead service line.
  - Tier 2 – buildings, including multifamily homes, with premise plumbing made of lead and/or served by a lead service line.
  - Tier 3 – include single family homes that are either:
    - Sites served by a lead connector,
    - Sites served by a galvanized service line ever downstream of an LSL or lead connector, or
    - Sites with galvanized premise plumbing ever downstream of an LSL or lead connector.
  - Tier 4 – sites containing copper pipes with lead solder installed before the state lead ban (March 1987).
  - Tier 5 – sites that are representative of locations throughout the distribution system.

Monitoring Requirements – What's new (cont.)?

- Sample Procedure:
  - 1 L in volume, after at least 6 hours of stagnation (same as LCR).
  - Residential housing samples must be collected from a kitchen or bathroom tap. Non-residential samples must be collected from a tap typically used for consumption (same as LCR).
  - **NEW**: 1st and 5th Liter Samples
    - For **ALL** sites, the 1st liter sample must be analyzed for lead and copper.
    - For **Tier 1 and 2 sites only**, a 5th liter sample must also be analyzed for lead.



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Monitoring Requirements – What's new (cont.)?

- 90th Percentile Calculation
  - For systems with only Tier 3, 4, or 5 sites, all lead and copper samples must be included in the 90th percentile calculation (same as LCR).
  - **NEW**: Calculation for systems with sufficient Tier 1 and 2 sites to meet the minimum number of required sample sites.
    - For **lead**, use the higher result from the 1st or 5th liter for each site. Calculate the 90th percentile as normal.
    - For **copper**, use the 1st liter result for all sites and calculate the 90th percentile as normal.
    - Cannot use any samples collected from Tier 3, 4, or 5 sites in this calculation.
  - **NEW**: Calculation for systems with insufficient Tier 1 and 2 sites to meet the minimum number of required sample sites.
    - For **lead**, use the higher result from the 1st or 5th liter for each Tier 1 and 2 site and the highest samples from Tier 3, 4, or 5 until minimum is met. Calculate the 90th percentile.
    - For **copper**, use all 1st liter samples from Tier 1 and 2 sites first, then highest samples from Tier 3, 4, or 5 until minimum is met. Calculate the 90th percentile.
    - Any remaining Tier 3, 4, or 5 samples cannot be included in the 90th percentile calculations.

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Thank You!

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