New Jersey Department of Environmental Protection
Division of Water Supply and Geoscience

Guidance for Developing a Lead and Copper Sampling Plan

October 2017

The primary objective of the Lead and Copper Rule (LCR), 40 CFR 141.80-91, is to minimize lead and copper levels in public drinking water systems primarily through reducing the corrosivity of the water in the distribution system. The LCR applies to community water systems (CWS) and non-transient non-community water systems (NTNCWS). Transient non-community water systems are not subject to the LCR requirements; however, in New Jersey, licensed child care facilities that are transient non-community, or non-public, water systems must meet the Safe Drinking Water Act requirements of a NTNCWS under the Madden Law (P.L. 2007, c.1).

The LCR requires CWS and NTNCWS to monitor lead and copper levels at the consumer's tap; specifically, one typically used for consumption.

All CWS and NTNCWS must develop a Lead and Copper Sampling Plan (LCSP) which must be maintained and on record for submission to the New Jersey Department of Environmental Protection (NJDEP) and/or the administrative authority upon request. The water system must update the LCSP as needed based on any change within the water system, such as, but not limited to, water main replacements, treatment change, lead service line replacement, etc.

This document is intended to assist water systems with the preparation of their LCSP. A template along with additional guidance is available on our webpage (http://www.nj.gov/dep/watersupply/dwc-lead-public.html). Appendix A lists all forms referenced in this document that must be submitted with the LCSP, and Appendix B lists additional resources all with links to the web locations. Water systems must refer to this guidance when completing the template to ensure all required sections and information is included.

Contents

Acronyms:

AL: Action Level

ALE: Action Level Exceedance

CCT: Corrosion Control Treatment

CWS: Community Water System

EPTDS: Entry Point to the distribution system

LCSP: Lead and Copper Sampling Plan

LSL: Lead Service Line

LSLR: Lead Service Line Replacement

NTNCWS: Non-transient non-community water system

PE: Public Education

WQP: Water Quality Parameter

1. Sampling Plan Certification

The LCSP is required to be certified by the plan preparer, water system owner, and licensed operator. As all three parties have a responsible role in developing and/or implementing the LCSP, these parties shall review and sign off on the LCSP to acknowledge that the information provided is true and accurate to the best of their knowledge and belief. The signature certification shall also include the date of certification, the title of the person providing certification, and license number (for licensed operators).

Each time the LCSP is updated it must be re-certified by the plan preparer, water system owner, and licensed operator.

2. General Water System information:

Information that is required includes:

- Water system name;
- PWSID number;
- System type (CWS, NTNCWS); *Transient/Non-Public Daycares may also be following this guidance to comply with the Division of Childcare and Families licensing process.*
- NTNCWS sensitive population served if applicable (daycare, school, hospital);
- System source type (Ground Water (GW), Surface Water (SW), Ground Water Under the Influence of Surface Water (GUDISW), Surface Water Purchased (SWP), Ground Water Purchased (GWP));
- Total number of service connections (for NTNCWS this equals the number of buildings served);
- System size under the LCR based on the residential and non-transient populations they serve, as shown in the table below:

System	Population
Large	> 50,000
Medium	3,301 to 50,000
Small	< 3,301

- Population served (excluding transient populations).

2.a Contact Information

For the system owner, licensed operator, and LCSP preparer including:

- Name and title;
- Phone number;
- Email; and
- License classification and number (for licensed operator).

2.b List of Sources and Treatment Facilities

Must include a complete list of all facilities, including:

- List of treatment plants with facility ID (i.e., TP001001) indicating whether the treatment plant is year-round, seasonal, or emergency;
- List of sources (i.e., wells (WL), intakes (IN), interconnections (CC)) with source ID (i.e., WL001002, IN001002, CC001002) that flow to each treatment plant;
    - Identify if the source is year-round/emergency/seasonal use. If seasonal, identify the seasonal operating period.
    - If the source is an interconnection, either permanent or seasonal, identify percentage of water received.

- List all installed corrosion control treatment used for lead and/or copper; and
- Location of any additional corrosion control treatment (CCT) used for lead and/or copper that does not have a facility ID, such as booster stations.

An example of how to display this information is shown below and is available in the LCSP template as Table 2.b.

2.b List of Sources and Treatment Facilities *Add additional rows and information as necessary*

Treatment Facility/ID# (TP)[1]	Supplying Source(s)/ID# (WL, IN)[1]		Corrosion Control Used[3]
TP _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _ ☐ No Treatment[2] CH _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _	_ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _ _ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _	_ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _ _ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _	☐ Chemical feed(s) operated for CCT ☐ pH Adj. Process/Chem: _____ ☐ Orthophosphate/Orthophosphate Blend ☐ Silica ☐ Alkalinity Adj. Process/Chem: _____ ☐ None
TP _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _ ☐ No Treatment[2] CH _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _	_ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _ _ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _	_ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _ _ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _	☐ Chemical feed(s) operated for CCT ☐ pH Adj. Process/Chem: _____ ☐ Orthophosphate/Orthophosphate Blend ☐ Silica ☐ Alkalinity Adj. Process/Chem: _____ ☐ None
Bulk Suppliers	**Interconnections /ID# (CC)[1]**		**Corrosion Control Used by Supplier[3]**
PWSID: NJ _ _ _ _ _ _ _ PWSID: NJ _ _ _ _ _ _ _	_ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _ _ _ _ _ _ _ _ _ ☐ Year Round ☐ Emergency ☐ Seasonal _ _/_ _ to _ _/_ _	% of water received from interconnection(s): _____ _____	☐ Chemical feed(s) operated for CCT ☐ pH Adj. Process/Chem: _____ ☐ Orthophosphate/Orthophosphate Blend ☐ Silica ☐ Alkalinity Adj. Process/Chem: _____ ☐ None
Additional Corrosion Control Treatment Locations[4]			**Corrosion Control Used**
			☐ Chemical feed(s) operated for CCT ☐ pH Adj. Process/Chem: _____ ☐ Orthophosphate/Orthophosphate Blend ☐ Silica ☐ Alkalinity Adj. Process/Chem: _____ ☐ None

2.c Contact information for bulk purchasers and wholesalers

As sample results and treatment or source changes may impact bulk purchasers and/or wholesalers, it is necessary to include up to date contact information. Additionally:

- Indicate if system has no bulk purchasers or wholesalers; and/or
- Indicate if connection is year-round, seasonal or emergency.

3. Distribution System Map

The following information is required:

- Clearly identify the following water system components:
  - All entry points to the distribution system (EPTDS) (permanent and emergency);
  - Standard lead and copper (PBCU) sampling sites;
  - Alternate PBCU sampling sites;
  - Location of all taps used for human consumption/food preparation (NTNCWS);
    - NTNCWS with a significant number of taps may contact the NJDEP to request if a summary of drinking water outlet tap locations (i.e., # of taps per floor) is acceptable in lieu of identifying all individual taps on the distribution system map.

- Include the following if applicable to the system:
  - Reduced PBCU sampling sites;
  - Delineation of pressure zones;
  - Booster stations with CCT for lead and/or copper;
  - Storage tanks;
  - Lead service lines (NTNCWS) or delineation of area served by lead service lines and/or lead goosenecks (CWS);
  - Delineation of areas receiving CCT for lead and/or copper;
  - Delineation of areas receiving no CCT or different CCT from seasonal EPTDS;
  - Blow offs/flushing points.

Note the following:

- Do not indicate layout of distribution mains, or include any other potentially sensitive information.
- NTNCWS may submit a detailed sketch in lieu of a map.

4. Current Monitoring Schedule

Designate the current monitoring requirements including frequency, months, and the number of samples.

Each water system must complete at least two consecutive 6-month standard monitoring periods, not exceeding the lead and copper action level (AL), before the water system may be placed on reduced monitoring. If the water system is on optimal water quality parameter monitoring, then the NJDEP must approve this reduction in writing based on a request from the water system and review that the water system is in compliance with the NJDEP designated optimal water quality parameter values. *Note: Sampling under reduced monitoring (annual or triennial) is required to be conducted between June–September.*

Note: *Effective January 1, 2017 NJDEP placed all large systems on standard lead and copper monitoring until further notice. NJDEP will also be placing small and medium systems on standard lead and copper monitoring until further notice that fail to submit the lead and copper sampling plan within the required timeframe, as well as those that demonstrate they have not been sampling in accordance with the LCR.*

5. Materials Evaluation (40 CFR. 141.86)

A materials evaluation of the entire distribution system is required to identify a pool of targeted sampling sites that meet the Tier criteria for lead and copper sampling.

All CWS and NTNCWS must complete:

- A detailed summary of the materials evaluation, including the resources used to identify materials.
- A summary of the potential sites.
- A *Lead and Copper Sample Site Certification* (Form BWSE-15) for each site sampled in the previous sampling event only (unless otherwise requested).

In addition,

- NTNCWS are required to submit the *Materials Evaluation Survey for Non-Community Water Systems* (Form BWSE-17).
- CWS are required to submit the *Lead and Copper Sampling Pool Certification* (Form BWSE-14). The site information listed in Form BWSE-14 shall be all the sites sampled in the previous sample event only.

The water system must identify if the following categories of piping and plumbing materials are present in the entire distribution system:

- Lead from piping, solder, caulking, interior lining of distribution mains and home plumbing;
- Copper from piping, service lines and home plumbing;
- Galvanized piping, service lines, and home plumbing; and
- Ferrous piping material such as cast iron and steel.

Additionally, the system must indicate the following:

- Presence of any lead service lines/lead goosenecks
- Total number of lead service lines/lead goosenecks present
- Location of lead service lines/lead goosenecks

If the water system is unaware of any of the above, then a strategy must be outlined for confirming presence and location of lead service lines and/or lead goosenecks within the distribution system going forward. This strategy must be included in the LCSP.

To identify if these materials are present in the distribution system, including lead service lines and/or lead goosenecks, and within home plumbing, a water system must use, but not be limited to, the following resources:

- Distribution system resources:
    - Distribution system maps and record drawings;
    - Capital improvement plans and/or master plans for distribution system development;
    - Utility records including meter installation records, customer complaint investigations and all historical documentation which indicate and/or confirm the location of lead service connections;
    - Results from service line sampling where lead service lines are suspected to exist but their presence is not confirmed; and/or
    - Results from community survey.
- Residential or non-residential building resources
    - County appraisal district records;
    - Contacts within the water system, municipal office or other local officials;
    - Survey results from area plumbers who are asked about when and where copper pipe with lead solder was used;
    - Documented interviews of residents- letters, phone survey, personal contact, etc.; and/or
    - Documented interviews of local contractors, developers, and builders.

Note: *CWS are not required to inspect the interior plumbing of potential sites. However, it is strongly recommended to inquire about the materials of a customer's plumbing on the sample instructions/chain of custody which is explained later in this guidance. NTNCWS may have a licensed plumber evaluate the plumbing materials of the distribution system, if no records of materials are available, and identify all potential sampling site locations.*

Additionally, the system must collect such information where possible in the course of its normal operations (i.e., checking service line materials when reading water meters or performing maintenance activities).

Following any confirmation/modification to the distribution system and/or interior plumbing materials, the LCSP must be updated accordingly and the sampling pool re-evaluated to ensure that the required targeted Tier sites are being sampled.

6. Designation of Sample Sites

Each water system must identify a pool of targeted sampling sites, which must be sufficiently large to ensure that the water system can collect samples from the minimum number of required sites pursuant to 40 CFR 141.86(c) (see chart below for required number of sites). Water systems must use the materials evaluation to identify the Tier 1, 2, and 3 sites in the distribution system. Sample sites used are required to meet the Tier requirements set forth in 40 CFR. 141.86(a). Water systems must also identify alternate sample site locations in the LCSP.

Population Served*	Required Minimum Number of Standard Sites	Required Minimum Number of Reduced Sites	Required Minimum Number of Alternate Sites	Total Required Minimum Number of Sites in Sampling Pool
> 100,000	100	50	50	150
10,001 – 100,000	60	30	30	90
3,301 – 10,000	40	20	20	60
501 – 3,300	20	10	10	30
101 – 500	10	5	5	15
≤ 100	5	5	5	10

*Population served only accounts for residential and non-transient population types.

Customer agreement to participate in sampling does not have to be obtained for the site to be included in the sampling pool. If necessary, a water system will be required to maintain documentation of a customer's refusal to participate during the monitoring period.

6.a Community Water Systems

Tier	Criteria
Tier 1	Single-Family Structures: • Served by a lead service line; and/or • Containing copper pipes with lead solder installed after 1982 and before 1987[1]; and/or • Containing lead pipes. Note: When multiple-family (multi-family) residences constitute at least 20% of the structures served by a water system, the system may include Tier 2 multi-family residences as sampling sites in its Tier 1 sampling pool.
Tier 2	Buildings, including multi-family residences: • Served by a lead service line; and/or • Containing copper pipes with lead solder installed after 1982 and before 1987*; and/or • Containing lead pipes.
Tier 3	Single family structures that contain copper pipes with lead solder installed before 1983.
Non-Tier (N)	Structures with other plumbing materials.[2]

[1]*Though the effective date for the lead ban in NJ was 1987, there is still a possibility of lead solder being used in construction after this date. Water systems are advised to carefully consider the Tier level of homes and buildings built during this time.*

[2] *It is strongly recommended to target non-tier multi-family residences or other buildings that contain copper pipes with lead solder installed before 1983 before targeting other non-tier sites.*

In addition, CWS are required to identify the sample category for each site using the table below.

Sample Category	Description	Corresponding Tier Level
i	Single family residence with lead service line	1
ii	Single family residence with lead solder copper piping constructed after 1982	1
iii	Single family residence with lead pipes	1
iv	Multi-family residence with lead service line	2*
v	Multi-family residence with lead solder copper piping constructed after 1982	2*
vi	Multi-family residence with lead pipes	2*
vii	Single family home with lead solder copper piping constructed before 1983	3
viii	Single family home that does not meet Tier 1, 2, or 3 criteria	N
ix	Multi-family home that does not meet Tier 1, 2, or 3 criteria	N
x	Non-residential building with lead service line	2
xi	Non-residential building with lead solder copper piping constructed after 1982	2
xii	Non-residential building with lead plumbing	2
xiii	Non-residential building with lead solder copper piping constructed before 1983	N
xiv	Non-residential building that does not meet Tier 1, 2, or 3 criteria	N

*When multiple-family residences constitute at least 20% of the structures served by a water system, the system may include Tier 2 multi-family residence sampling sites in its Tier 1 sampling pool.

The *PBCU Sample Location Spreadsheet* (Form BWSE-18) is to be completed and submitted electronically along with this LCSP to watersupply@dep.nj.gov. All sites listed in the sampling pool (standard and alternate) must be inputted onto the spreadsheet. See section 6.e below.

6.b Non-Transient Non-Community

Tier	Criteria
Tier 1	Buildings: • Served by a lead service line; and/or • Containing copper pipes with lead solder installed after 1982 and before 1987*; and/or • containing lead pipes.
Tier 2	Buildings that contain copper pipes with lead solder installed before 1983.
Non-Tier (N)	Structures with other plumbing materials.

**Though the effective date for the lead ban in NJ was 1987, there is still a possibility of lead solder being used in construction after this date. Water systems are advised to carefully consider the Tier level of homes and buildings built during this time.*

In addition, NTNCWS are required to identify the sample category for each site using the table below.

Sample Category	Description	Corresponding Tier Level
X	Non-residential building with lead service line	1
xi	Non-residential building with lead solder copper piping constructed after 1982	1
xii	Non-residential building with lead plumbing	1
xiii	Non-residential building with lead solder copper piping constructed before 1983	2
xiv	Non-residential building that does not meet Tier 1, 2, or 3 criteria	N

The *PBCU Sample Location Spreadsheet (Form BWSE-18*) is to be completed and submitted electronically along with this LCSP to watersupply@dep.nj.gov. All sites listed in the sampling pool (standard and alternate) must be inputted onto the spreadsheet. See section 6.e below.

6.c General notes for designating sampling sites for CWS and NTNCWS

Note the following important considerations when designating sample sites:

- **If a water system contains lead service lines/goosenecks and other Tier 1 sites, 50 percent of sample sites must be from lead service lines/goosenecks and 50 percent from other Tier 1 sites (CWS)**;
- Sampling pool should consist of Tier 1 sites;
- When a sufficient number of Tier 1 sites do not exist or are inaccessible, the water system must complete its sampling pool with Tier 2 sites;
- When a sufficient number of Tier 2 sites do not exist or are inaccessible, the water system must complete its sampling pool with Tier 3 sites;
- If a water system does not contain Tier 1, 2, or 3 sampling sites, then sample sites must be evenly distributed throughout the distribution system;
- Only one dwelling within a multi-family residence building is to be sampled;
- CWS are required to sample from interior kitchen or bathroom taps most commonly used for drinking/consumption;
- NTNCWS are required to sample from interior taps typically used for human consumption (i.e., kitchen, drinking water fountain, breakroom, etc.). Taps not typically used for consumption (i.e. bathroom taps) may only be used if there are not enough taps typically used for consumption available;
- If the water system contains only plastic plumbing, but the faucets and fittings contain lead, the system should collect tap samples at these locations;
- If the NTNCWS contains more than one building that meets the appropriate Tier criteria, samples should be collected from more than one building. However, if only one building meets the tier criteria, then all samples should be collected from the same building.[3];
- If the NTNCWS contains multiple levels or areas that have received varying plumbing renovations; this must be taken into account when selecting sample sites. For example, a Tier 2 multi-level building that had the first-floor plumbing materials (internal and fixtures) completely replaced with lead free materials after 1987 should not select sampling sites located on the renovated level;
- If the NTNCWS contains fewer sampling taps than the required number of sampling sites, samples may be collected from the same taps on different days; and
- Samples may not be taken from taps that have point of use (POU) or point of entry (POE) (into a home or building) treatment devices designed to remove inorganic contaminants, unless the treatment device treats the entire water supply prior to entering the distribution system.

6.d Sample Pool Requirements

The LCSP must include the following in regard to the sampling pool:

- List of sites used for standard lead and copper monitoring;
- List of sites to be used for reduced lead and copper monitoring (if applicable)
- List of sites to be used as alternate locations;
- Tier designation and Sample Category for all sites;

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[3] However, if the water flows through a building that meets the appropriate Tier and then into a building that does not meet the appropriate Tier one sample should be taken from the second building to ensure the plumbing of the first building is not impacting the drinking water in the second building. For example, if the water flows from the well through Building A to Building B and only Building A has copper piping with lead solder; one sample should be taken in Building B to demonstrate if the lead solder in Building A is impacting Building B. A note explaining this is to be included in the LCSP.

6.e Water System Sampling Pool; PbCu Sample Location Spreadsheet (BWSE-18)

Once the water system has established the sampling pool, the *PBCU Sample Location Spreadsheet* (Form *BWSE-18*) is to be completed and submitted electronically in a excel format (.xlsx) along with the LCSP to watersupply@dep.nj.gov. All sites listed in the sampling pool (standard and alternate) must be inputted onto the spreadsheet. Sample site locations may not be greater than 20 characters and it is recommended to clearly label each site and minimize the use of punctuation since these sample site locations must be entered/submitted to NJDEP for each future sampling event.

The NJDEP approved Form BWSE-18, along with any updates,
must be provided to the system's certified laboratory to ensure proper submission of lead and copper analytical results to the NJDEP. It is strongly recommended to submit revisions early in the monitoring period to ensure results can be submitted properly via E2. Note that prior to LCSP approval, labs must still submit samples using the "DS/DS" codes.

If a water system needs to add a new site (standard or alternate), change the Tier classification of an existing site in its sampling pool, and/or remove (deactivate) a sample site, the new information must be inputted onto the spreadsheet and submitted electronically in a excel format (.xlsx) to watersupply@dep.nj.gov with the following information in the subject line: "PWS NJ#######, PBCU Sample Location Spreadsheet." Note that only the new information is to be submitted (i.e., existing sites with no changes are not to be re-submitted). Instruction on how to complete the spreadsheet can also be found at our website.

Any change in sample site locations between monitoring periods must be submitted to the NJDEP using the *Lead and Copper Sample Site Change Form (BSDW-56)*, which can be found on our webpage (See Appendix B).

7. Sampling Protocols (40 CFR.141.86(b))

It is strongly recommended that lead and copper samples be collected early in the monitoring period to ensure samples arrive at the laboratory in a timely manner and are analyzed before the end of the monitoring period. This will also allow for any required actions (i.e., initial water quality parameter monitoring) to be conducted within the required timeframe, if applicable.

7.a Customer Participation

The system should evaluate, in advance of the monitoring period, if a sufficient number of appropriate sites designated in the targeted lead and copper sampling pool are available. Contacting the customers early in the monitoring period and determining whether the sites still meet the Tier criteria as a sample location will ensure enough sample sites are available. Water systems are to sample the same sites as the previous monitoring period unless higher tiered sites are now accessible.

CWS must outline the process in which the system will select and contact the customers for sampling. The NJDEP has a statement for encouraging customer participation available on our website that water systems can provide to customers in addition to their own outreach materials. If a CWS will routinely contact more than the minimum number of required sites (i.e., customers) and supply sampling bottles to all of the customers that respond, the LCSP must detail this routine additional sampling, and the submission of all results, including those in excess of the required amount, to calculate compliance.

If insufficient Tier 1, 2, and/or 3 sites are accessible, the water system must maintain proper documentation of outreach to the customers soliciting their participation in the sampling event along with the customer's refusal and/or non-response.

7.b Sampling Instructions

First draw samples may be collected by the system or the system may allow residents to collect first draw samples after providing the residents the sampling procedures.

- If a system allows residents to perform sampling, the system may not challenge, based on alleged errors in sample collection, the accuracy of sampling results.
- To avoid problems with residents handling nitric acid, acidification of the first draw samples may be done up to 14 days after the sample is collected.

Sampling procedures must be provided to the individual collecting the sample and a copy of these instructions must be enclosed within the LCSP. The instructions provided must be in accordance with 40 CFR.141.86(b) and EPA's Memorandum titled *Clarification of Recommended Tap Sampling Procedures for Purposes of the Lead and Copper Rule*, dated February 29, 2016. NJDEP strongly recommends using the version on our website titled: Customer Sample Collection Procedure Instructions.

If a system elects to collect their own first draw samples, the person collecting the samples must be provided with sampling procedures and a copy of these instructions must be enclosed within the LCSP. In addition, within the LCSP, explain how the sample collector will be notified of the designated sampling sites and how he/she is adhering to and verifying the 6-hour stagnation time.

If a NTNCWS has a certified laboratory collect the lead and copper tap samples, provide the contact information for the certified laboratory, explain how the laboratory is notified of the designated sampling sites, and how the system is ensuring that the laboratory is adhering to these sampling sites as well as the 6-hour minimum stagnation time. Attach a copy of the laboratory's sampling protocols.

A copy of the sample instructions must be included in the LCSP and must include the following in regard to the collection of lead and copper samples:

- Do not sample a location not in use or that has not been used for a significant period of time (i.e., while school is closed for the season, vacant building, etc.); and
- Do not sample from outside hose spigots.
- First draw samples from residential housing must be collected from the cold-water kitchen or bathroom sink tap;
- First draw samples from NTNCWS must be collected at an interior tap from which water is typically drawn for consumption;
- Each first draw sample for lead and copper must be 1 liter in volume and have stood motionless in the plumbing system of each sampling site for at least six hours;
- Do not perform or recommend pre-stagnation flushing (flushing the tap for a specified period of time prior to starting the minimum 6-hour stagnation time);
- Wide-mouth bottles should be used for all Lead and Copper compliance samples;
- Do not remove and/or clean the aerators prior or during lead and copper sample collection;
- First draw samples must be collected at the same sampling sites used in the previous monitoring period unless a site is no longer accessible, a site no longer meets the Tier criteria, and/or a new site with a higher Tier criteria is now accessible;

Additionally, the LCSP should contain protocols for the following as applicable:

- If the water system is a NTNCWS and operates 24 hours (i.e., a hospital), outline procedures to ensure the water stands motionless in the area of the tap for a minimum of 6 hours or identify the times and

locations that would likely result in the longest standing time (if received written approval from the NJDEP to collect any non-first draw samples);
- Define how the sample collection is documented (i.e., chain of custody, customer fills out a form);
- Define how the water system will determine and document if any plumbing changes have occurred between sampling events; and
- Define how POE/POU treatment will be identified and documented (i.e., chain of custody, customer fills out a form).

7.c Change of Sample Site Protocol

Changes to sample sites are allowed when a water system can no longer gain access to the site, if the original site location no longer meets the Tier selection criteria, and/or if a new site with a higher Tier criteria is now accessible. If a change of site occurred for any reason, the *Lead and Copper Sample Site Change Form* (BSDW-56) must be submitted within 10 days following the end of the monitoring period. If the previous site no longer meets the Tier criteria and/or the sampled site needs to be added as a standard or alternate site, then the LCSP must be updated and the *PBCU Sample Location Spreadsheet* (BSWE-18) must be updated and submitted electronically to watersupply@dep.nj.gov (See Section 6.e).

7.d Additional Sample Site Collection

Outline situations and protocols when the water system will collect additional lead and copper samples (i.e., per homeowner's request, customer complaint). The table below represents options; the water system's LCSP must outline scenarios in which additional monitoring will be conducted and how the results will be reported to the NJDEP.

Additional Sample Criteria	Collected within the Monitoring Period and meets Tier Criteria[4]	Collected outside the Monitoring Period OR does not meet Tier Criteria
Routinely distribute more sample bottles than the required number of sample sites outlined in the LCSP[5]	Must be highest Tier and used to calculate the 90th percentile. Submit via E2	Submit *Non-Compliance Lead and Copper Tap Monitoring Form* (BWSE-16)
Customer complaint/homeowner's request[6]	Submit via E2 and use to calculate the 90th percentile.	
First Draw Confirmation sample[7]	Submit via E2 and use to calculate the 90th percentile.	
Flushed Confirmation sample	Submit *Non-Compliance Lead and Copper Tap Monitoring Form* (BWSE-16).[8]	

[4] All first draw samples collected in accordance with the sampling requirements during the monitoring period must be submitted and used in calculating the 90th percentile if the sample site meets the Tier requirements (i.e., the site is the same as or higher Tier than what the sampling pool is comprised of). For example, if a homeowner requests sampling and the home is determined to be Tier 1, the result must be included in the 90th percentile calculation.

[5] If the water system distributes more sample bottles than the required number of sites to ensure the required number of sampling locations is met the sites must be of the highest Tier possible.

[6] Following a lead action level exceedance, water systems are required to provide information on how a customer may have their drinking water sampled. The water system may elect to collect and analyze the lead/copper samples in response to customer requests; however, they are required to be submitted to NJDEP as indicated above.

[7] If a sample site result is greater than the AL, the LCSP should detail whether a confirmation sample will be collected. The NJDEP strongly recommends a confirmation sample be collected within the monitoring period; both results must be provided to the customer. (The system may elect to also collect a flushed sample; however, this result cannot be used for compliance).

[8] The *Lead and Copper Sampling Site Certification* (Form BWSE-15) must be completed for any non-compliance sample collected from a site not included on Form BWSE-18 and submitted to the NJDEP along with Form BWSE-16.

8. Sample Invalidation Procedures (40 CFR.141.86(f))

A water system must include in the LCSP sample invalidation procedures. This must indicate when a sample invalidation request will be submitted to the Bureau of Safe Drinking Water (BSDW), when/how a replacement sample will be collected, and the associated time frames.

The LCSP must include the following regarding sample invalidation:

- Sample invalidation procedures including situations when a sample may be invalidated and how it will be documented;
- Who is responsible for determining when a sample invalidation request should be submitted to the BSDW;
- Procedures for contacting the NJDEP; and
- Protocols for collecting a replacement sample.

A sample may only be invalidated if it meets any of the following conditions:

- The laboratory establishes that improper sample analysis caused erroneous results;
- The NJDEP determines that the sample was taken from a site that did not meet the site selection criteria;
- The sample container was damaged in transit; or
- There is substantial reason to believe that the sample was subject to tampering.

Note: The water system is responsible for the sample result. Improper sampling by a resident may not be a valid reason to invalidate a sample. The water system must provide clear instructions to the residents. A thorough review of the information and comments provided on the customer sample sheet should be conducted prior to submitting the sample to the laboratory, as once the sample is analyzed it cannot be invalidated unless it meets the conditions listed above (i.e., if customer collects the sample from an outside spigot, the system may elect to not analyze the sample).

Water systems and/or their certified laboratory must contact the BSDW to request an evaluation for a sample invalidation. If the sample is invalidated, it will not count toward determining lead or copper 90th percentile levels and a replacement sample must be taken if the system has too few samples to meet the minimum samples required after the invalidation. The replacement sample must be taken as soon as possible, but no longer than 20 days after the date the NJDEP invalidates the sample or by the end of the monitoring period, whichever occurs later. The replacement samples must be taken at the same location as the invalidated sample or if not possible, at an approved alternate site that was not already sampled for in the monitoring period. The system must report the results of all samples to the NJDEP and all supporting documentation for samples the system believes should be invalidated. The NJDEP cannot invalidate a sample solely based on the grounds that a follow-up sample result is higher or lower than the original sample.

9. Plan of Action when the Lead and/or Copper AL is Exceeded

The LCSP must include all the action plans associated with an action level exceedance (ALE). Upon becoming aware of exceeding the lead and/or copper AL, the following actions are required, and must be detailed in the LCSP:

- Notification to NJDEP within 48 hours;
- Notification to bulk purchasers (if applicable);
- Return to standard lead and copper tap monitoring, if currently on reduced;
- Water Quality Parameter (WQP) Monitoring (i.e., initial, follow-up, optimal);

- Implementation of Source Water Sampling and Treatment Steps;
- Implementation of Corrosion Control Treatment (CCT) Steps;
- Public education (for lead AL only); and
- Lead Service Line Replacement (for systems with lead AL and existing CCT)

9.a Notification to NJDEP and bulk purchasers

Upon exceeding the lead or copper AL, the NJDEP must be notified within 48 hours. It is strongly recommended that wholesale water systems also notify bulk purchasers of an ALE.

Additionally, all wholesale water systems must notify the NJDEP and subsequent bulk purchasers within 6 hours (for emergencies) or at least 5 days prior (for scheduled changes) of any change in source water and/or change in CCT.

9.b Return to standard lead and copper tap monitoring, if currently on reduced.

A system must return to six-month monitoring periods at the standard number of sampling sites immediately following an ALE starting January 1st or July 1st, whichever is sooner.

Note:

- *If a system exceeds the lead and/or copper AL and/or is conducting optimal WQP monitoring and the system incurs a treatment technique violation for failure to comply with the NJDEP designated optimal water quality parameter values, the water system is required to return to standard monitoring January 1st or July 1st, whichever is sooner.*
- *If a system adds, deletes or alters treatment and/or sources that may impact water quality in the distribution system, the system may be required to return to standard monitoring January 1st or July 1st, whichever is sooner.*

9.c. Water Quality Parameter (WQP) Monitoring (40 CFR. 141.87)

The LCSP must outline water quality parameter (WQP) monitoring requirements for water systems on initial monitoring unless the requirements are outlined in a separate WQP Sampling Plan. Please refer to our Water Quality Parameter Guidance for information on completing this section of the LCSP.

Note that following an ALE, small and medium water systems are required to conduct initial WQP monitoring, unless they are already conducting follow-up or optimal WQP monitoring at all active entry points to the distribution system. Initial WQP monitoring will be required at the entry points that do not currently have CCT and within the distribution system.

For water systems on follow-up or optimal monitoring a separate WQP Sampling Plan is required. Please refer to our Water Quality Parameter Sampling Plan Template and Water Quality Parameter Guidance available at http://www.nj.gov/dep/watersupply/dwc-lead-public.html.

9.d Source Water Sampling and Treatment Steps (40 CFR. 141.83)

The water system must include in its LCSP the Source Water Sampling and Treatment steps that will be taken for the individual water system. Source water monitoring is required for every active permanent source. A water system must complete lead and copper source monitoring within 6 months of the end of the monitoring period in which the water system exceeded the lead or copper AL. The LCSP must outline all the requirements for the system including:

- Sample Locations

- Sample Collection
- Staff responsible for source water treatment and sample collection
- Protocols for submittal of source water treatment recommendation.

Source water sample locations are as follows:

- Ground water source samples are required to be collected at the entry point to the distribution system (EPTDS) which is representative of each well after treatment. (Source water sampling is only collected at the raw water tap if the system does not have treatment.)
- Surface water source samples must be collected at each EPTDS after any application of treatment or in the distribution system at a point which is representative of each source after treatment.
- If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e. when water is representative of all sources being used)
- Permanent, active interconnection source samples must be collected at the point of interconnect.
- Any emergency EPTDS in use must also be sampled.

Based on the source water monitoring results, a water system is required to submit a source water treatment recommendation to the NJDEP no longer than 180 days after the end of the monitoring period during which the lead and/or copper AL was exceeded.

Note: *The source water treatment recommendation is separate from the CCT recommendation.*

9.e Corrosion Control Treatment (CCT) Steps (40 CFR. 141.82)

The water system must include in its LCSP the CCT steps that will be taken for that individual system. Water systems that exceed the lead and/or copper AL must recommend to the NJDEP installation of alkalinity/pH adjustment and/or phosphate/silicate based inhibitor and evaluate the effectiveness of the treatment within 6 months from the end of the monitoring period which it exceeds the AL.

For systems where CCT is already used for lead or copper, these protocols should be reflective of the systems in place. This shall include submittal of a corrective measures report for the existing CCT to NJDEP within 30 days of the exceedance. For systems without CCT the protocol needs to detail the steps that will be taken for that individual system and should reference any prior approved CCT recommendations if applicable.

Note*: A water system is required to use and submit the applicable excel template from the Environmental Protection Agency's Optimal Corrosion Control Treatment Recommendation document available at* https://www.epa.gov/dwreginfo/optimal-corrosion-control-treatment-evaluation-technical-recommendations*.*

9.f Public Education (40 CFR. 141.85)

The water system must include in its LCSP the public education (PE) protocol it will follow if the lead AL is exceeded. Systems do not need to conduct PE after a copper AL exceedance. Water systems must submit all written PE materials to the NJDEP for review and approval prior to delivery.

The water system must distribute written PE within 60 days of the end of the monitoring period to all bill paying customers. A water system may discontinue implementation of its PE program if the system does not exceed the lead AL during the most recent 6-month monitoring period. The system must resume PE if it exceeds the lead AL at any time during any future monitoring period.

Public Education templates are available at http://www.nj.gov/dep/watersupply/dws-sampreg.html for CWS and NTNCWS. The LCSP can reference the locations to the actual templates; the PE templates do not need to be included. *It is strongly recommended that water systems use the state approved templates.*

The *Public Education Certification* (Form BSDW-55, See Appendix B for link) must be submitted to the NJDEP within 10 days after implementation of any PE requirement. *Form BSDW-55 is required to be submitted following implementation of on-going public education requirements (i.e., quarterly billing, 6-month press release, etc.).*

For additional information on PE please refer to EPA's website at https://www.epa.gov/dwreginfo/lead-and-copper-rule-compliance-help-public-water-systems#PE

9.g Lead Service Line Replacement Requirements (40 CFR. 141.84)

Water systems that fail to meet the lead AL during lead and copper tap monitoring conducted after installation and operation of CCT and have lead service lines (LSL) and/or lead goosenecks must initiate lead service line replacement (LSLR). A water system must replace annually at least 7 percent of the initial number of LSL in its distribution system that are owned by the water system. If the water system does not own any portion of the LSLs, then it must offer to replace them (the system is not required to bear the cost of replacement, it may be at the homeowner's expense). The first year of LSLR must begin on the first day following the end of the monitoring period in which the lead AL was exceeded. If monitoring is required annually or less frequently, the end of the monitoring period is September 30 of the calendar year in which the sampling occurs.

The LCSP must outline the following:

- Initial number of LSL in the distribution system before commencing the LSLR program (i.e., the current number of LSL);
    - If the water system does not have an accurate number and location of all LSL, the LCSP must outline a plan on how the water system will identify the LSL in the distribution system (i.e., during meter replacement and water main breaks, review plumbing permits).
- An inventory of all LSL including when they are replaced and if it was partial or whole replacement;
- Indicate which portion is owned by the water system and the portion owned by the homeowner;
- The water system's plan of action to replace LSL in accordance with the requirements outlined above;
- Sampling procedures to sample a tap in the customer's home when the LSL is replaced. Sampling should be conducted in accordance with 141.86(b)(3);
- In those instances, where there is a partial replacement, the system must also include protocols for, or at least reference, the following in accordance with 141.84(d)(1):
    - Customer notification 45 days prior to a partial replacement
    - Customer notification of temporary increase in lead levels
    - Guidance for customers on how to minimize their exposure
    - Sampling within 72 hours of a partial replacement

EPA's *Notification and Reporting Requirements for Partial Lead Service Line Replacement under the Lead and Copper Rule* is available at https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=901U0200.txt

Note that lead goosenecks shall also be included in the Lead Service Line Inventory and Replacement program.

10. Monitoring and Reporting Violation

The LCSP must include a protocol for establishing notification to the NJDEP within 48 hours after the system learns of the monitoring and reporting violation, implementing Tier 3 public notification requirements, and ensuring sample collection from the minimum number of required sites in subsequent monitoring periods. The NJDEP is requiring systems that incur a monitoring and reporting violation to return to standard monitoring beginning January 1st or July 1st, whichever is sooner. Additionally, the water system must send a copy and *Public Notice Certification* (BSDW-53) to the NJDEP within 10 days of issuance.

Tier 3 notifications, such as those required after a monitoring and reporting violation have the following requirements:

- Must be distributed within 1 year from becoming aware of the violation.
- Must be provided to each customer. CWS may consolidate these notices and send them with Consumer Confidence Reports (Annual Water Quality Reports)

11. Consumer Notice of Lead Tap Water Monitoring Results (40 CFR. 141. 85(d))

All water systems must provide a notice of the individual tap results from the lead tap monitoring to the person(s) served by the water system at the specific sampling site from which the sample was collected.

The LCSP must establish a procedure for the implementation of distributing the consumer notices. The notification must be distributed either by mail for CWS or posted for NTNCWS within 30 days of when the water systems learned of the results. The *Certification Form- Consumer Notice of Lead Tap Water Monitoring Results (BSDW-54,* see Appendix B for link*),* must be submitted to the NJDEP with a copy of a completed notice within 3 months following the end of the monitoring period.

Include a copy of the lead consumer notice in the LCSP or reference the NJDEP website. Lead consumer notice templates for CWS and NTNCWS can be found at http://www.nj.gov/dep/watersupply/dws-sampreg.html under "Lead & Copper."

The following information must be included within each consumer notice:

- Individual results of lead tap water monitoring for the tap that was tested;
- Explanation of the health effects of lead;
- Steps consumers can take to reduce exposure to lead in drinking water;
- Contact information for the water system;
- Maximum contaminant level goal (MCLG) for lead;
- AL for lead; and
- Definition of MCLG and AL from 40 CFR. 141.153(c) of the Consumer Confidence Rule.

12. Division of Water Supply & Geoscience Contact Information

The following contact information must be included within the LCSP:

- Bureau of Safe Drinking Water: 609-292-5550
- Bureau of Water System Engineering: 609-292-2957

Appendix A: Required Documentation to Submit to NJDEP for Proper Submission of LCSP

All public CWS and NTNCWS:

- LCSP: Lead & Copper Sampling Plan Template
- PbCu Sample Location Spreadsheet (BWSE-18)
- Lead and Copper Sample Site Certification (BWSE - 15)

All CWS must also submit:

- Lead and Copper Sampling Pool Certification (BWSE - 14)

All NTNCWS must also submit:

- Materials Evaluation Survey for Non-Community Water Systems (BWSE – 17)

Appendix B: Additional Resources

It is strongly recommended that water systems frequently check the Division of Water Supply & Geoscience's website for new and updated resources.

- Division of Water Supply & Geoscience: Lead in Drinking Water - Public Water System Information
  - DEP Statement for Customer Participation
  - Customer Sampling Instructions
  - Directions for PbCu Sample Location Spreadsheet
  - Water Quality Parameter Sampling Plan Guidance
  - Water Quality Parameter Sampling Plan Template
  - Lead and Copper Approved Analytical Methods and Reporting Requirements Guidance

- Fact Sheets
  - Materials Evaluation and Site Selection
  - Reduced Lead and Copper Monitoring Requirements
  - Selecting Reduced Lead and Copper Sample Sites
  - Initial WQP Monitoring
  - Follow-Up WQP Monitoring
  - Optimal WQP Monitoring
  - Seasonal Sources
  - Approved Person (Person Acceptable to the State)
  - PE Factsheet
  - LSL Replacement

- Lead and Copper Sampling & Regulatory Forms
  - Lead and Copper Sample Site Change Form (BSDW-56)
  - Non-Compliance Lead and Copper Tap Monitoring Form (BWSE-16)
  - Lead Copper Sampling Suspension Form (LC-01)
  - WQP Monitoring Report Form for Approved Party
    - Directions for WQP Monitoring Report Form
  - Optimal Water Quality Control Parameter Recommendation Form (BWSE-LC03)
  - CCT installation Certification Form (BWSE-LC02)

- Public Education
  - CWS Lead Public Education Template
  - NTNC Lead Public Education Template
  - Public Education Certification Form - Lead Action Level Exceedance (BSDW-55)

- Lead Consumer Notice
  - Certification Form - Consumer Notice of Lead Tap Water Monitoring Results (BSDW 54)
  - Community Water System:
    - Consumer's Individual Result and Water System's 90th Percentile Result Below Action Level
    - Consumer's Individual Result and Water System's 90th Percentile Result Above Action Level
    - Consumer's Individual Result Below Action Level and Water System's 90th Percentile Result Above Action Level

        - Consumer's Individual Result Above Action Level and Water System's 90th Percentile Result Below Action Level
    - Noncommunity Water System:
        - 90th Percentile Result Below Action Level
        - 90th Percentile Result Above Action Level

- EPA: Lead and Copper Rule: A Quick Reference Guide
- EPA: Actions You Can Take To Reduce Lead In Drinking Water
- EPA: Memo Addressing Lead and Copper Rule Requirements for Optimal Corrosion Control Treatment
- EPA: Memo Clarifying Recommended Tap Sampling Procedures for Lead and Copper Rule February 29, 2016
- EPA: Lead and Copper Rule Monitoring and Reporting Guidance for Public Water Systems
- EPA: Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems