digital format. Small and medium-size systems shall make available the monitoring results in either a written or digital format. Water systems shall retain tap sampling monitoring data in accordance to recordkeeping requirements under §141.91.

[56 FR 26548, June 7, 1991; 56 FR 32113, July 15, 1991; 57 FR 28788, June 29, 1992, as amended at 65 FR 2007, Jan. 12, 2000; 72 FR 57817, Oct. 10, 2007; 86 FR 4296, Jan. 15, 2021; 86 FR 31947, June 16, 2021]

§141.87 Monitoring requirements for water quality parameters.

All large water systems, and all small- and medium-size water systems that exceed the lead or copper action level, and all small- and medium-size water systems with corrosion control treatment that exceed the lead trigger level must monitor water quality parameters in addition to lead and copper in accordance with this section.

(a) *General requirements*—(1) *Sample collection methods.* (i) Tap samples must be representative of water quality throughout the distribution system, taking into account the number of persons served, the different sources of water, the different treatment methods employed by the system, and seasonal variability. Tap sampling under this section is not required to be conducted at taps targeted for lead and copper sampling under §141.86(a). Sites selected for tap samples under this section must be included in the site sample plan specified under §141.86(a)(1). The site sample plan must be updated prior to changes to the sampling locations. [Note: Systems may find it convenient to conduct tap sampling for water quality parameters at sites used for total coliform sampling under §141.21(a)(1) if they also meet the requirements of this section.]

(ii) Samples collected at the entry point(s) to the distribution system must be from locations 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).

(2) *Number of samples.* (i) Systems must collect two tap samples for applicable water quality parameters during each monitoring period specified under paragraphs (b) through (e) of this section from the minimum number of sites listed in table 1 to this paragraph (a)(2)(i). Systems that add sites as a result of the ''find-and-fix'' requirements in §141.82(j) must collect tap samples for applicable water quality parameters during each monitoring period under paragraphs (b) through (e) of this section and must sample from that adjusted minimum number of sites. Systems are not required to add sites if they are monitoring at least twice the minimum number of sites list in table 1 to this paragraph (a)(2)(i).

TABLE 1 TO PARAGRAPH (a)(2)(i)

System size (number people served)	Minimum number of sites for water quality parameters
>100,000	25
10,001–100,000	10
3,301–10,000	3
501–3,300	2
101–500	1
≤ 100	1

(ii)(A) Except as provided in paragraph (c)(2) of this section, water systems without corrosion control treatment must collect two samples for each applicable water quality parameter at each entry point to the distribution system during each monitoring period specified in paragraph (b) of this section. During each monitoring period specified in paragraphs (c) through (e) of this section, water systems must collect one sample for each applicable water quality parameter at each entry point to the distribution system.

(B) During each monitoring period specified in paragraphs (c) through (e) of the section, water systems with corrosion control treatment must continue to collect one sample for each applicable water quality parameter at each entry point to the distribution system no less frequently than once every two weeks.

(b) *Initial sampling for water systems.* Any large water system without corrosion control treatment must monitor for water quality parameters as specified in paragraphs (b)(1) and (2) of this

section during the first two six-month tap sampling monitoring periods beginning no later than January 1 of the calendar year after the system either becomes a large water system, or fails to maintain their 90th percentile for lead below the PQL for lead. Any medium or small system that exceeds the lead or copper action level and any system with corrosion control treatment for which the State has not designated OWQPs that exceeds the lead trigger level shall monitor for water quality parameters as specified in paragraphs (b)(1) and (2) of this section for two consecutive 6-month periods beginning the month immediately following the end of the tap sampling period in which the exceedance occurred.

(1) At taps, two samples for:

(i) pH;

(ii) Alkalinity;

(2) At each entry point to the distribution system all of the applicable parameters listed in paragraph (b)(1) of this section.

(c) *Monitoring after installation of optimal corrosion control or re-optimized corrosion control treatment.* (1) Any system that installs or modifies corrosion control treatment pursuant to §141.81(d)(5) or (e)(5) and is required to monitor pursuant §141.81(d)(6) or (e)(6) must monitor the parameters identified in paragraphs (c)(1)(i) and (ii) of this section every six months at the locations and frequencies specified in paragraphs (c)(1)(i) and (ii) of this section until the State specifies new water quality parameter values for optimal corrosion control pursuant to paragraph (d) of this section. Water systems must collect these samples evenly throughout the 6-month monitoring period so as to reflect seasonal variability.

(i) At taps, two samples each for:

(A) pH;

(B) Alkalinity;

(C) Orthophosphate, when an inhibitor containing an orthophosphate compound is used;

(D) Silica, when an inhibitor containing a silicate compound is used.

(ii) Except as provided in paragraph (c)(1)(iii) of this section, at each entry point to the distribution system, at least one sample no less frequently than every two weeks (biweekly) for:

(A) pH;

(B) When alkalinity is adjusted as part of optimal corrosion control, a reading of the dosage rate of the chemical used to adjust alkalinity, and the alkalinity concentration; and

(C) When a corrosion inhibitor is used as part of optimal corrosion control, a reading of the dosage rate of the inhibitor used, and the concentration of orthophosphate or silica (whichever is applicable).

(iii) Any groundwater system can limit entry point sampling described in paragraph (c)(1)(ii) of this section to those entry points that are representative of water quality and treatment conditions throughout the system. If water from untreated groundwater sources mixes with water from treated groundwater 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 (c)(1)(iii), the water system must provide to the State, written information identifying the selected entry points and documentation, including information on seasonal variability, sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(2) States have the discretion to require small and medium-size systems with treatment for which the State has not designated OWQPs that exceed the lead trigger level but not the lead and copper action levels to conduct water quality parameter monitoring as described in paragraph (c)(1) of this section or the State can develop its own water quality control parameter monitoring structure for these systems.

(d) *Monitoring after State specifies water quality parameter values for optimal corrosion control.* (1) After the State specifies the values for applicable water quality parameters reflecting optimal corrosion control treatment under §141.82(f), systems must monitor for the specified optimal water quality parameters during 6-month periods that begin on either January 1 or July 1. Such monitoring must be spaced evenly throughout the 6-month monitoring period so as to reflect seasonal variability and be consistent with the

structure specified in paragraphs (c)(1)(i) through (iii) of this section.

(i) All large systems must measure the applicable water quality parameters specified by the State and determine compliance with the requirements of §141.82(g) every six months with the first 6-month 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) Any small or medium-size water system that exceeds an action level must begin monitoring during the six-month period immediately following the tap sampling monitoring period in which the exceedance occurs and continue monitoring until the water system no longer exceeds the lead and copper action levels and meets the optimal water quality control parameters in two consecutive 6-month tap sampling monitoring periods under §141.86(d)(3). For any such small and medium-size system that is subject to a reduced monitoring frequency pursuant to §141.86(d)(4) at the time of the action level exceedance, the start of the applicable 6-month monitoring period under this paragraph must coincide with the start of the applicable tap sampling monitoring period under §141.86(d)(4).

(iii) Compliance with State-designated optimal water quality parameter values must be determined as specified under §141.82(g).

(2) Any small or medium-size system that exceeds the lead trigger level, but not the lead and copper action levels for which the State has set optimal water quality control parameters must monitor as specified in paragraph (d)(1) of this section every six month, until the system no longer exceeds the lead trigger level in two consecutive tap sampling monitoring periods.

(3) States have the discretion to continue to require systems described in paragraph (d)(2) of this section to monitor optimal water quality control parameters.

(e) *Reduced monitoring.* (1) Any large water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) and does not exceed the lead trigger level during each of two consecutive 6-month monitoring periods under paragraph (d) of this section must continue monitoring at the entry point(s) to the distribution system as specified in paragraph (c)(1)(ii) of this section. Such system may collect two tap samples for applicable water quality parameters from the following reduced number of sites during each 6-month monitoring period. Water systems must collect these samples evenly throughout the 6-month monitoring period so as to reflect seasonal variability.

TABLE 2 TO PARAGRAPH (e)(1)

System size (number of people served)	Reduced minimum number of sites for water quality parameters
>100,000	10
10,001–100,000	7
3,301–10,000	3
501–3,300	2
101–500	1
≤100	1

(2)(i) Any water system that maintains the range of values for the water quality parameters reflecting optimal corrosion control treatment specified by the State under §141.82(f) and does not exceed the lead trigger level or copper action level during three consecutive years of monitoring may reduce the frequency with which it collects the number of tap samples for applicable water quality parameters specified in paragraph (e)(1) of this section, from every six months to annually. This sampling begins during the calendar year immediately following the end of the monitoring period in which the third consecutive year of 6-month monitoring occurs.

(ii) A water system may reduce the frequency with which it collects tap samples for applicable water quality parameters specified in paragraph (e)(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 PQL 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 in §141.80(c)(3), and that it also has maintained the range of values for the water quality parameters reflecting optimal corrosion control

treatment specified by the State under §141.82(f).

(3) A water system that conducts sampling annually must collect these samples evenly throughout the year so as to reflect seasonal variability.

(4) Any water system subject to the reduced monitoring frequency that fails to operate at or above the minimum value or within the range of values for the water quality parameters specified by the State in §141.82(f) for more than nine days in any 6-month period specified in §141.82(g) must resume distribution system tap water sampling in accordance with the number and frequency requirements in paragraph (d) of this section. Such a system may resume annual monitoring for water quality parameters at the tap at the reduced number of sites specified in paragraph (e)(1) of this section after it has completed two subsequent consecutive 6-month rounds of monitoring that meet the criteria of paragraph (e)(1) of this section and/or may resume annual monitoring for water quality parameters at the tap at the reduced number of sites after it demonstrates through subsequent rounds of monitoring that it meets the criteria of either paragraph (e)(2)(i) or (ii) of this section.

(f) *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 making any determinations (*i.e.,* determining concentrations of water quality parameters) under this section or §141.82.

(g) *Additional sites added from find-and-fix.* Any water system that conducts water quality parameter monitoring at additional sites through the ''find-and-fix'' provisions pursuant to §141.82(j) must add those sites to the minimum number of sites specified under paragraphs (a) through (e) of this section unless the system is monitoring at least twice the minimum number of sites.

[86 FR 4300, Jan. 15, 2021]

§141.88 Monitoring requirements for lead and copper in source water.

(a) *Sample location, collection methods, and number of samples.* (1) A water system that fails to meet the lead or copper action level on the basis of tap samples collected in accordance with §141.86 shall collect lead and copper source water samples in accordance with the following requirements regarding sample location, number of samples, and collection methods:

(i) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point). The system shall take one sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(ii) Surface water systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point). The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

NOTE TO PARAGRAPH (a)(1)(ii): For the purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.

(iii) 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).

(iv) The State may reduce the total number of samples which must be analyzed by allowing the use of compositing. Compositing of samples must be done by certified laboratory personnel. Composite samples from a maximum of five samples are allowed, provided that if the lead concentration in the composite sample is greater than or equal to 0.001 mg/L or the copper concentration is greater than or equal to 0.160 mg/L, then either:

(A) A follow-up sample shall be taken and analyzed within 14 days at each