



Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Water Supply Management

Lead and Copper

A Working Guide to the Lead and Copper Rule



DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Water Supply Management

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Authority: Pennsylvania's Safe Drinking Water Act (35 P.S. § 721.1 *et seq.*) and regulations at 25 Pa. Code Chapter 109.

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Minor changes were made to pages 12 and 15.

Policy: Department of Environmental Protection (DEP) staff will follow the guidance and procedures presented in this document to direct and support implementation of the Lead and Copper Rule under the safe drinking water management programs.

Purpose: The purpose of this document is to establish a rational and reasonable basis for staff decisions which will promote quality, timely and consistent service to the public and regulated community.

Applicability: This guidance will apply to all community and nontransient noncommunity water systems as defined under the Pennsylvania Safe Drinking Water Act.

Disclaimer: The policies and procedures outlined in this guidance are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of DEP to give the rules in these policies that weight or deference. This document establishes the framework within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

Page Length: 69 pages

Location: Volume 21, Tab 02

Definitions: See 25 Pa. Code Chapter 109

PREFACE

GUIDE DESCRIPTION

A Working Guide to the Lead and Copper Rule is a comprehensive guide designed to provide necessary, useful information to public water suppliers concerning the Lead and Copper Rule. The guide summarizes some regulatory requirements and elaborates or paraphrases others. Refer to 25 Pa. Code Chapter 109, Subchapter K: Regulation of Lead and Copper for precise regulatory language.

The following is a brief synopsis of the sections found in this guide:

Section 1 - Summary

Offers an overview of the regulatory requirements and the rationale for control of lead and copper in drinking water.

Section 2 - Initial Monitoring

Details the requirements for initial monitoring including the materials survey and sample site location plan.

Section 3 - Special Monitoring

Discusses special monitoring as an option for small and medium systems following initial monitoring and prior to initiation of construction or modification of corrosion control treatment facilities.

Section 4 - Public Education

Explains the public education requirements related to a lead action level excellence.

Section 5 - CCT Compliance Schedule

Outlines the compliance schedule including a time table for installation of corrosion control treatment as well as feasibility study and permit requirements.

Section 6 - Follow-up Monitoring

Describes the requirements for follow-up monitoring conducted after completion of construction or modification of corrosion control treatment facilities.

Section 7 - Lead Service Line (LSL) Replacement

Details the requirements for LSL replacement for systems continuing to exceed the lead action level following installation of corrosion control treatment.

Section 8 - OCCT Performance Requirements

Explains the water quality performance requirements for systems installing corrosion control treatment. Systems are required to operate this treatment within specified performance standards designated by DEP. Includes the requirements for systems conducting monitoring following performance requirements.

Section 9 - Reduced Monitoring

Outlines the requirements for reduced monitoring for lead and copper and water quality parameters.

Section 10 - Public Notification

Describes the public notification requirements triggered by violations of the Lead and Copper Rule.

Section 11 - System Management Responsibilities

Explains the system management responsibilities for reporting and recordkeeping, an operation and maintenance plan, and operator certification and training.

The small and medium water systems flow chart (page v) serves as a road map for this guide. The first page of each section contains a flow chart highlighted to indicate the section topic. The large water systems flow chart (page vi) is provided in the preface and serves as a reference tool for large systems. The large system chart includes the same section numbers as those found in the small and medium water systems flow chart.

RESOURCES

USEPA. Drinking Water Regulations: Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper, 40 CFR Parts 141 and 142.

USEPA. 1992. Lead and Copper Rule Guidance Manual, Volume 1: Monitoring, and Volume 2: Corrosion Control Treatment.

USEPA. Lead in Drinking Water Regulation: Public Education Guidance.

Preface

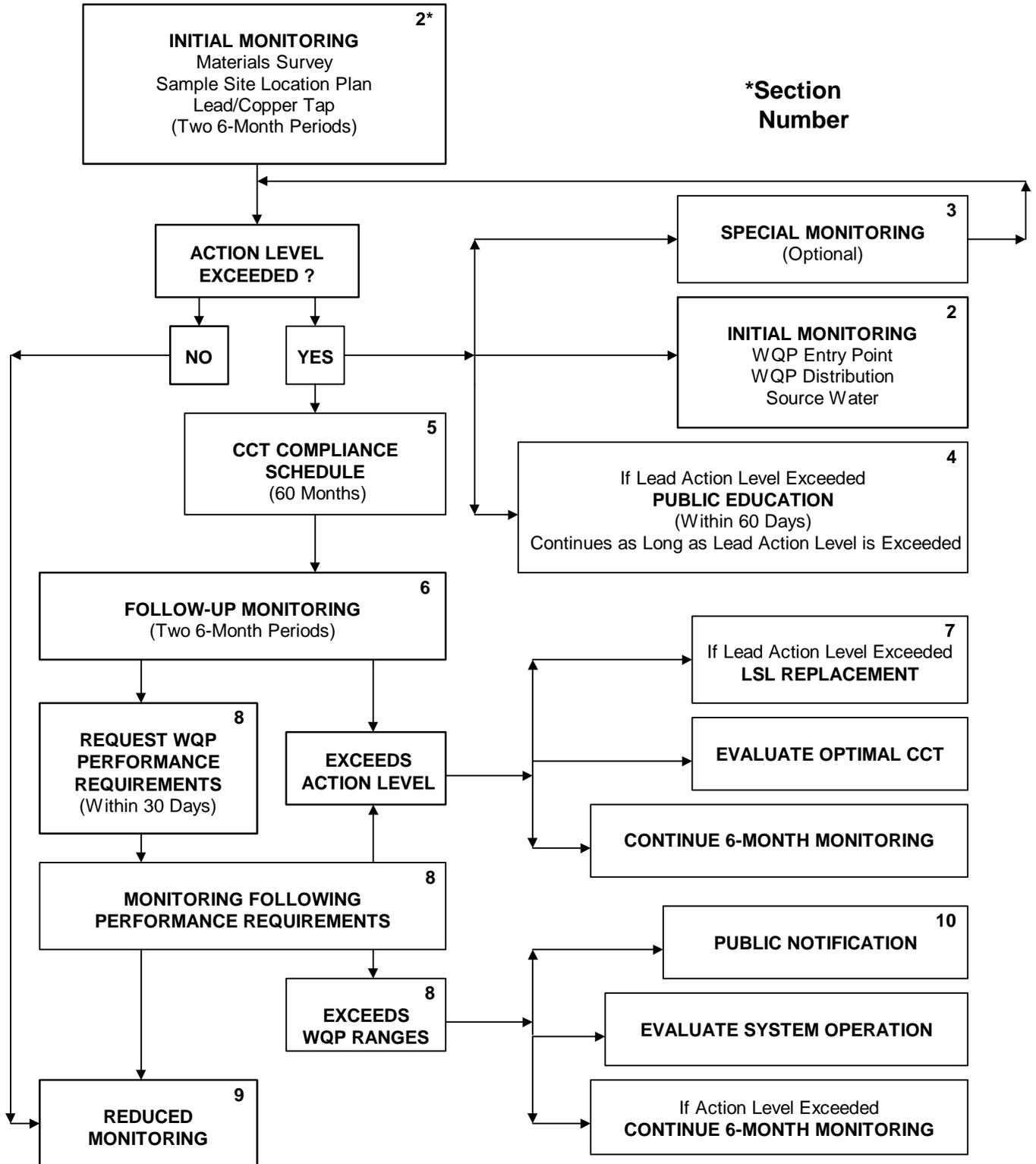
DEP. 25 PA Code Chapter 109, Subchapter K: Regulation of Lead and Copper.

DEP. Corrosion Control Treatment Basic Feasibility Study.

DEP. Corrosion Control Analogous Treatment Program for Small Public Water Systems, Basic Water System Information Form.

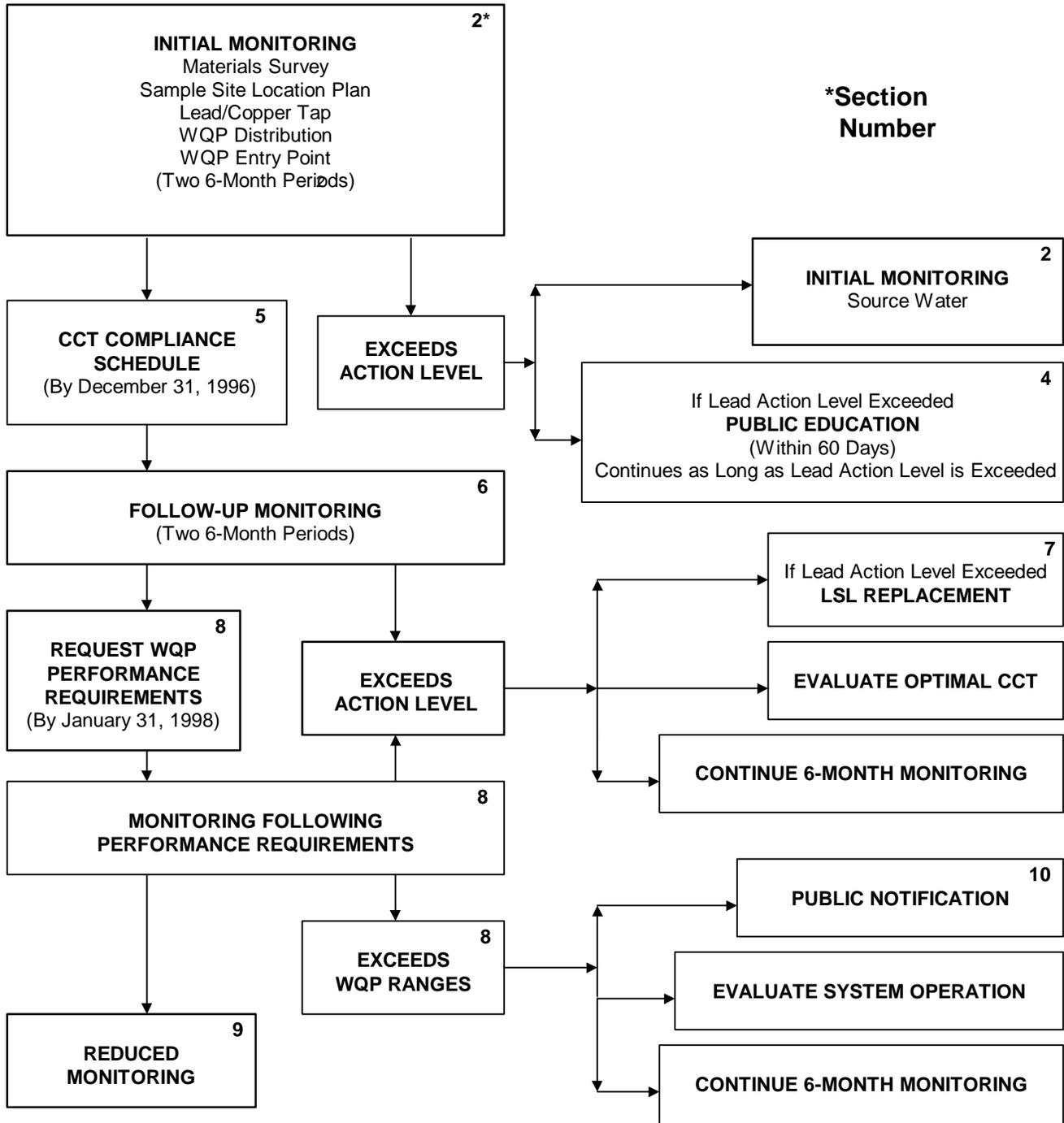
U.S. Environmental Protection Agency (EPA) resource materials may be obtained by contacting the Safe Drinking Water Hotline at (800) 426-4791. DEP materials may be obtained by contacting the local or regional DEP office.

SMALL AND MEDIUM WATER SYSTEMS



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

LARGE WATER SYSTEMS



NOTE: The Large Systems flow chart is provided as a reference. The flow chart at the beginning of each section is the Small and Medium Systems flow chart. Section references are the same for both flow charts.

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SUMMARY

On June 7, 1991, the U.S. Environmental Protection Agency (EPA) issued its final Lead and Copper Rule. That final rule fulfills a statutory requirement of the 1986 amendments to the federal Safe Drinking Water Act. The 1986 amendments establish a list of 83 contaminants which EPA must regulate. Lead and copper are among those contaminants. Promulgation of the state's Lead and Copper Rule was necessary to comply with the provisions of the Pennsylvania Safe Drinking Water Act. State regulations at least as stringent as the federal rule were necessary for Pennsylvania to maintain primary enforcement responsibility (primacy) under the federal Safe Drinking Water Act.

The state's Lead and Copper Rule became effective December 24, 1994. This rule applies to all community and nontransient noncommunity water systems and classifies systems based on the population they serve.

SYSTEM	POPULATION
<i>Large</i>	>50,000
<i>Medium</i>	3,301 to 50,000
<i>Small</i>	<3,301

The primary objective of this rule is to control lead and copper levels in public drinking water systems through a treatment technique for corrosion control.

The rule establishes a lead action level of **0.015 mg/L** and a copper action level of **1.3 mg/L**. An action level is not an MCL. It represents a level at which the system must take additional action under its control to reduce lead or copper levels and inform consumers about the actions they can take to lower exposure to lead in drinking water.

CONTAMINANT	ACTION LEVEL (mg/L)*
Lead	0.015
Copper	1.3
<i>*Measured in 90th percentile at taps</i>	

The rule establishes a treatment technique that includes requirements for:

- ***Corrosion control treatment (CCT),***
- ***Lead service line (LSL) replacement, and***
- ***Public education (PE).***

Treatment technique requirements are triggered by exceedances of an action level as measured in the 90th percentile at the consumers' taps. An action level is exceeded when the concentration of the contaminant in more than 10 percent of tap water samples is greater than the action level.

The comprehensive monitoring requirements of this rule will identify the contributions of different sources of lead and copper corrosion by-products to drinking water and will enable a water system to determine the lead and copper concentrations to which its customers may be exposed.

Systems exceeding either the lead or copper action level are required to install optimal corrosion control treatment (OCCT), source water treatment or both. OCCT is defined as follows:

OCCT minimizes the lead and copper concentrations at users' taps while ensuring that the treatment does not cause the system to violate any primary maximum contaminant level.

A system may achieve OCCT in one of the following ways:

1. Small and medium systems can achieve OCCT by not exceeding either action level for lead and copper tap monitoring during two consecutive six-month monitoring periods.
2. Large systems can achieve OCCT if, during two consecutive six-month monitoring periods, its lead and copper tap monitoring results do not exceed the action levels at the 90th percentile and the difference between the 90th percentile lead level and the highest source water lead concentration is less than 0.005 mg/L.
3. OCCT can be met by any size system when the system installs new CCT facilities or modifies existing treatment and operates in compliance with the WQP performance standards specified for that system by DEP.

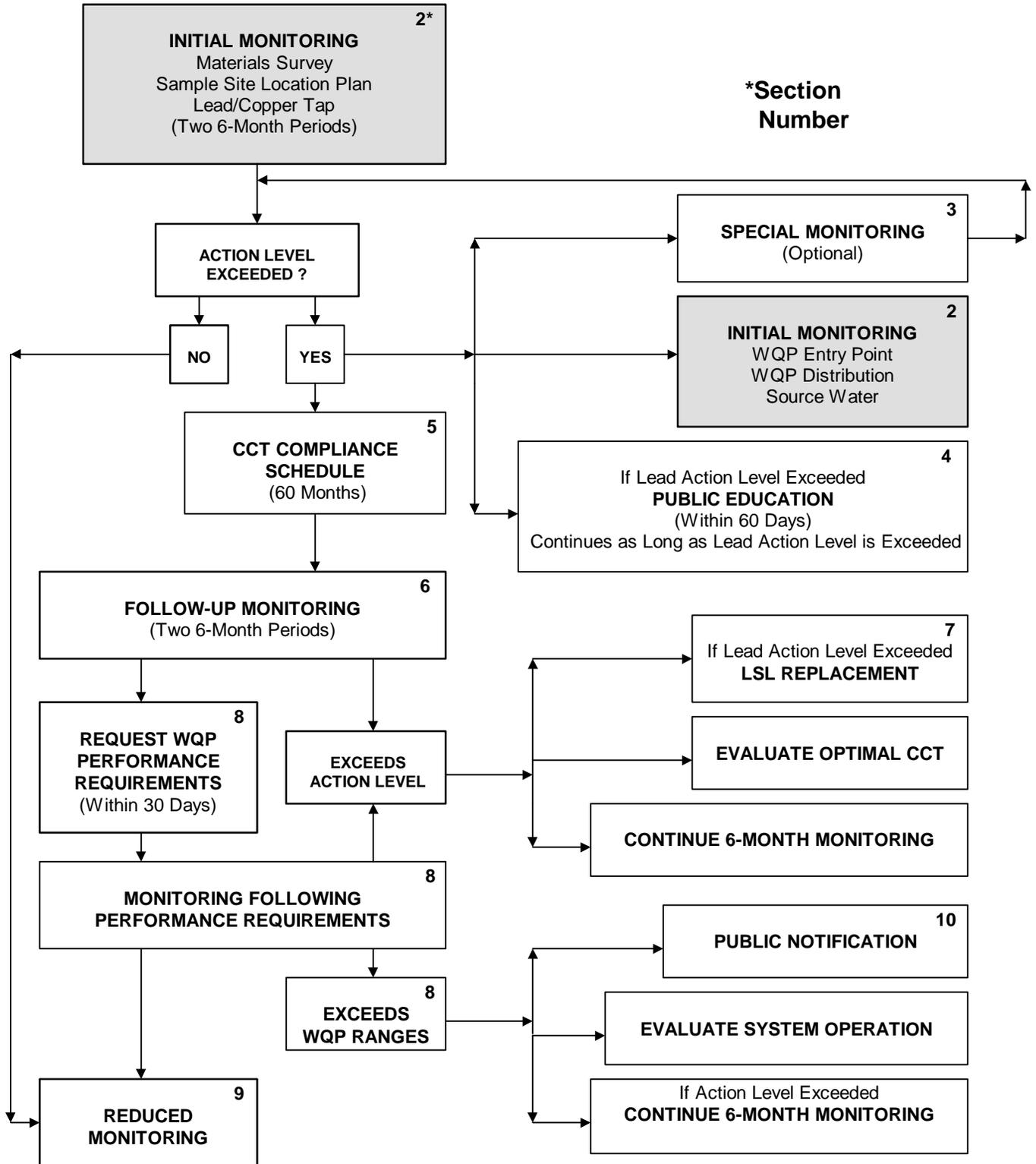
After treatment, if lead levels are still too high, systems are required to replace LSLs. Systems that exceed the lead action level are required to implement a PE program about the effects of lead in drinking water.

HEALTH EFFECTS AND SOURCES OF LEAD AND COPPER

The severity of lead contamination depends on the amount of lead in the distribution system and home plumbing and on the corrosiveness of the water. The highest lead levels occur in the first-draw tap water after several hours of water stagnation in pipes and plumbing materials. Nearly all public water systems in Pennsylvania contain some type of leaded plumbing materials either in the distribution system or in homes or other buildings. An EPA study conducted in the mid 1980s indicated that 85 percent of Pennsylvania’s community water systems have corrosive water, with the water in 35 percent of the systems being highly corrosive. The EPA estimates that lead in drinking water contributes between 10 to 20 percent of total lead exposure in young children.

Contaminant	Low Level Health Effects	Sources in Drinking Water
Lead	<p><i>Children:</i></p> <p>Altered physical and mental development; interference with growth; deficits in IQ, attention span, and hearing; interference with heme synthesis.</p> <p><i>Women:</i></p> <p>Increased blood pressure; shorter gestational period.</p> <p><i>Men:</i></p> <p>Increased blood pressure.</p>	<p><i>Corrosion of:</i></p> <ol style="list-style-type: none"> 1. Lead solder and brass fixtures. 2. Lead service lines (20% of public water systems.) <p><i>Source Water:</i> (1% of public water systems.)</p>
Copper	<p>Stomach and intestinal distress; Wilson’s disease.</p>	<p><i>Corrosion of:</i></p> <p>Interior household and building pipes.</p>

SECTION 2



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

INITIAL MONITORING

MATERIALS SURVEY

The Lead and Copper Rule requires all community and nontransient noncommunity water systems to collect tap water samples to determine lead and copper levels to which customers may be exposed. Tap water samples must be collected from sampling locations that meet the following criteria.

COMMUNITY WATER SYSTEMS

For community water systems, lead and copper tap water samples must be collected from sampling locations that meet one of the following criteria:

- Tier 1.** Single family structures that contain lead pipes, or copper pipes with lead solder **installed after 1982**, and/or are served by lead service lines.
- Tier 2.** Buildings and multiple-family residences that contain lead pipes, or copper pipes with lead solder **installed after 1982**, and/or are served by lead service lines.
- Tier 3.** Single family structures that contain copper pipes with lead solder **installed before 1983**.

- Community water systems should identify more sampling sites than the required number during each monitoring period in case volunteers drop out of the sampling pool.
- **Water systems are not required to target buildings with lead solder installed after January 6, 1991**; effective date of the Pennsylvania Plumbing System Lead Ban and Notification Act.
- **Sampling pools 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.

Section 2-Initial Monitoring

- When a sufficient number of Tier 1 and 2 sites do not exist or are inaccessible, the water system must complete its sampling pool with Tier 3 sites.
- If tap water samples are collected from Tier 2 or 3 sites, the water system must explain why it could not identify a sufficient number of Tier 1 sites.
- If a water supplier collects additional lead and copper tap samples, these sites must be the highest tier sites possible. The supplier cannot dilute the 90th percentile value with lower tier sample sites.
- If multiple-family residences comprise at least 20 percent of the structures served by a water system, the system may consider a representative number of these structures as Tier 1 sites in its sampling pool.
- If a water system contains only plastic plumbing, but the faucets and fittings contain lead, the system should collect tap samples at single family structures with such faucets and fittings.
- Samples may not be taken from taps that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants.
- **If a water system contains lead service lines, 50 percent of the sampling sites should be served by a lead service line.**
- When a sufficient number of lead service line sites do not exist or are inaccessible, a water system must collect a tap water sample from each site served by a lead service line and must explain why it could not identify a sufficient number of lead service lines.
- If a water system has no lead service lines, but it does have lead goosenecks or pigtails, the system should collect tap water samples at the sites with the goosenecks and/or pigtails.

NONTRANSIENT NONCOMMUNITY WATER SYSTEMS

For nontransient noncommunity water systems, lead and copper tap water samples must be collected from sampling locations that meet one of the following criteria:

Tier 1. Buildings that contain copper pipes with lead solder **installed after 1982**, and/or are served by lead service lines.

Tier 2. Buildings that contain copper pipes with lead solder **installed before 1983**.

- **Nontransient noncommunity water systems are not required to target buildings with lead solder installed after January 6, 1991**; effective date of the Pennsylvania Plumbing System Lead Ban and Notification Act.
- **Sampling pools 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.
- If tap water samples are collected from Tier 2 sites, the water system must explain why it could not identify a sufficient number of Tier 1 sites.
- If the water system contains only plastic plumbing, but the faucets and fittings contain lead, the system should collect tap samples at single family structures with such faucets and fittings.
- If the water system contains fewer buildings than the required number of sampling sites, samples may be collected from different taps within a representative number of buildings. The taps should be those most commonly used for drinking and the samples should be taken on different days. If the system has an insufficient number of these taps to take each sample from a different tap, the system may sample from the same tap on different days.
- Samples may not be taken from taps that have point-of-use or point-of-entry treatment devices designed to remove inorganic contaminants. When water softeners are installed as central treatment, lead and copper tap samples should be taken after treatment.

SOURCES OF INFORMATION

Section 2-Initial Monitoring

All community and nontransient noncommunity water systems should survey all records documenting the materials used to construct and repair their distribution system and buildings connected to their distribution system in order to identify a sufficient number of lead and copper tap sampling sites. Sources of information include:

- Plumbing codes;
- Plumbing permits;
- Distribution maps and drawings;
- Inspection and maintenance records;
- Meter installation records;
- Standard operating procedures;
- Operation and maintenance manuals;
- Permit files;
- Existing water quality data;
- Interviews with senior personnel, building inspectors, and retirees;
and
- Community survey.

Several worksheets for organizing the information collected during the materials evaluation are attached. These worksheets should be useful when determining the sites that contain the highest priority materials.

SAMPLE SITE LOCATION PLAN

All community and nontransient noncommunity water systems must complete a sample site location plan prior to initiation of lead and copper sample collection. The plan shall include:

- Materials evaluation of distribution system,
- Lead and copper tap sample site locations,
- Water quality parameter sample site locations, and
- Certification that proper sampling procedures are used.

Form 141-A, Sample Site Identification and Certification, is attached for use in compiling this data.

The water system shall keep the sample site location plan on file. If the system is required to prepare a corrosion control treatment feasibility study, the system shall include the plan as part of the study.

INITIAL LEAD AND COPPER TAP MONITORING

Initial lead and copper tap monitoring for community and nontransient noncommunity water systems consists of two consecutive six-month periods. Monitoring periods begin in January and July and end in June and December.

The first six-month monitoring period for large, medium and small water systems shall begin on the following dates:

START DATE	SYSTEM POPULATION
January 1992 July 1992 July 1993	Large systems (>50,000) Medium-sized systems (3,301 to 50,000) Small systems (<3,301)

The first six-month monitoring period for any new water system created after December 24, 1994 shall begin with the next six-month monitoring period following the issuance of an operations permit or following the system's provision of water to a sufficient number of sampling sites for the water supplier to comply with sample site requirements, whichever period is later.

Section 2-Initial Monitoring

Large water systems shall monitor during two consecutive six-month periods and shall comply with the corrosion control treatment (CCT) compliance schedule (Section 5).

Small or medium water systems shall monitor during each six-month monitoring period until one of the following occurs:

1. The system exceeds either the lead or copper action level and is therefore required to comply with the CCT compliance schedule (Section 5).
2. The system meets both the lead and copper action levels during two consecutive six-month monitoring periods, in which case the system qualifies for reduced monitoring (Section 9).

All public water systems are required to collect one sample for lead and copper analysis from the following number of sites during each six-month monitoring period:

SYSTEM SIZE (POPULATION)	NUMBER OF LEAD AND COPPER TAP SAMPLING SITES
>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

INITIAL WATER QUALITY PARAMETER MONITORING

In addition to lead and copper, all large water systems and those small and medium-size systems that exceed the lead or copper action level, will be required to monitor for the following water quality parameters (WQPs):

- **pH;**
- **Alkalinity;**

- **Orthophosphate, when an inhibitor containing a phosphate compound is used;**
- **Silica, when an inhibitor containing a silicate compound is used;**
- **Calcium;**
- **Conductivity; and**
- **Water temperature.**

These parameters are used to identify optimal treatment and, once treatment is installed, to determine whether a system remains in compliance with the rule. Systems shall monitor WQPs at two separate locations:

- **Representative taps throughout the distribution system, and**
- **Entry points to the distribution system.**

A system shall collect **two sets** of WQP distribution samples from the following number of sample sites. The sample sites shall be representative of water quality throughout the distribution system taking into account the different sources of water, the different treatment methods, and seasonal variability. The sets of samples shall be collected from the same sample sites on different days and analyzed for the applicable WQPs.

SYSTEM SIZE (POPULATION)	NUMBER OF WQP DISTRIBUTION SAMPLING SITES
>100,000	25
10,001 to 100,000	10
3,301 to 10,000	3
501 to 3,300	2
101 to 500	1
≤100	1

A system shall also collect two sets of WQP samples at each entry point. The sets of samples shall be collected on different days and analyzed for the applicable WQPs.

INITIAL SOURCE WATER MONITORING

A system which exceeds either the lead or copper action levels shall collect one source water sample from each entry point within six months after the exceedance. Monitoring is required only for the parameter for which the action level was exceeded.

WATER SAMPLE COLLECTION PROTOCOL

LEAD AND COPPER TAP SAMPLES

- 1 liter sample size;
- **First-draw after six hour standing time. Lead and copper analyses from sample sites that have had long standing times (i.e. 24 hours or more) may have unusually high results. Water suppliers can encourage homeowners to flush the sample site prior to the six hour standing time requirement;**
- Cold water kitchen or bathroom tap OR interior tap used for consumption;
- Collected by the water supplier or residents (residents must be instructed of proper sampling procedures);
- If residents perform sampling, system may not challenge, based on alleged errors in sample collection or accuracy of sampling results;
- If sample is not acidified immediately after collection, sample must stand in original container for at least 28 hours after acidification;
- For subsequent monitoring, system shall make reasonable effort to collect each first-draw tap sample from same sampling site from which it collected a previous sample. If system is unable to use an original sampling site, system may collect the tap sample from another sampling site in its sampling pool as long as new site meets same targeting criteria, and is within reasonable proximity to original site; and

- **Collect early in monitoring period in order to allow time for collection of water quality parameter samples during same period if necessary.**

DEP will only consider lead and copper samples analyzed by a certified laboratory.

WATER QUALITY PARAMETER SAMPLES
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- Remove faucet aerator and fully flush the line;
- If collecting water quality parameter samples from the same location as coliform and disinfectant residual samples, collect coliform samples first; then measure disinfectant residual, temperature and pH; and finally collect samples for other water quality parameters;
- Collect samples in two 500 ml plastic or glass containers (plastic container must be used for silica);
- Measure temperature in the field;
- Measure pH in the field within 15 minutes of sample collection with a calibrated meter capable of measuring to 1/10 of a unit;
- Avoid agitating the water sample;
- Record observations about color, suspended solids, and flushing time required prior to sample collection;
- Store samples in a cool environment until analyzed;
- Confirmation samples must be taken within three days of receiving results of the first sample. Average the two results to determine compliance; and
- The two sets of water quality parameter samples should be collected at different times in the monitoring period to insure data is representative of seasonal changes.

Measurements for water quality parameters may be performed by a certified laboratory or by a person meeting the operator certification requirements. Proper analytical methods shall be used.

ANALYTICAL METHODS AND LABORATORY CERTIFICATION

EPA-approved analytical methods are designated in the rule for lead, copper, pH, conductivity, calcium, alkalinity, orthophosphate, silica, and temperature.

CONTAMINANT	METHODOLOGY	EPA	ASTM ¹	SM ²
<i>Lead</i>	Atomic absorption; furnace ICP-Mass spectrometry Atomic absorption; platform	200.8 ³ 200.9 ³	D3559-90D	3113B
<i>Copper</i>	Atomic absorption; furnace Atomic absorption; direct aspiration ICP ICP-Mass spectrometry Atomic absorption; platform	200.7 ³ 200.8 ³ 200.9 ³	D1688-90C D1688-90A	3113B 3111B 3120B
<i>pH</i>	Electrometric	150.1 ⁵ 150.2 ⁵	D1293-84	4500-H ⁺ -B
<i>Conductivity</i>	Conductance		D1125-91A	2510B
<i>Calcium</i>	EDTA titrimetric Atomic absorption; direct aspiration Inductively coupled plasma	200.7 ³	D511-93A D511-93B	3500-Ca-D 3111B 3120B
<i>Alkalinity</i>	Titrimetric		D1067-92B	2320B
<i>Ortho-phosphate, unfiltered, no digestion or hydrolysis</i>	Colorimetric, automated, ascorbic acid Colorimetric, ascorbic acid, single reagent Ion chromatography	365.1 ⁴ 300.0 ⁴	D515-88A D4327-91	4500-P-F 4500-P-E 4110
<i>Silica</i>	Colorimetric Molybdosilicate Heteropoly blue Automated method for molybdate-reactive silica Inductively coupled plasma	200.7 ³	D859-88	4500-Si-D 4500-Si-E 4500-Si-F 3120B
<i>Temperature</i>	Thermometric			2550B

Notes:

¹Annual Book of ASTM Standards, Vols. 11.01 and 11.02, American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

²18th edition of Standard Methods for the Examination of Water and Wastewater, 1992, American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.

³"Methods for the Determination of Metals in Environmental Samples - Supplement I," EPA-600/R-94/111, May 1994.

⁴"Methods for the Determination of Inorganic Substances in Environmental Samples," EPA-600/R-93/100, August 1993.

⁵Methods 150.1 and 150.2 are available from USEPA, EMSL-Cincinnati, OH 45268. The identical methods are also in "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79/020, March 1983.

The practical quantitation limit (PQL) is set at 0.005 mg/L for lead and 0.050 mg/L for copper. Laboratory certification criteria are $\pm 10\%$ at >0.050 mg/L for copper and $\pm 30\%$ at >0.005 mg/L for lead.

Laboratories are not required to be certified to test for pH, water temperature, calcium, orthophosphate, silica, alkalinity, or conductivity.

ATTACHMENTS

- Materials Survey Worksheets (1-3)
- Form 141-A, Sample Site Identification and Certification Form
- Suggested Directions for Homeowner Tap Sample Collection Procedures

WORKSHEET #2

MATERIALS SURVEY RESULTS BY NUMBER OF SERVICE CONNECTIONS FOR EACH PLUMBING MATERIALS TYPE

PWS ID NUMBER

POPULATION SERVED BY PWS

Type of Structure	Type of Plumbing Material			
	Interior Plumbing			Distribution
	Lead Pipe	Copper with Lead Solder > 1982	Copper with Lead Solder <1983	Entire Line
				Number of Service Connections
Number of Service Connections			Number of Service Connections	
SFRs				
MFRs				
BLDGs				
TOTAL				

WORKSHEET #3

SUMMARY OF MATERIALS SURVEY RESULTS

PWS ID NUMBER

POPULATION SERVED BY PWS

Plumbing Material	Type of Structure		
	SFR	MFR	BLDG
	Number of Service Connections		
Interior Plumbing			
Lead Pipe			
Copper Pipe with Lead Solder >1982			
Copper Pipe with Lead Solder <1983			
Lead Service Lines			
Entire Line			
Partial Line			
Total Available Sites			

SAMPLE-SITE IDENTIFICATION AND CERTIFICATION

PWSID No.:	_____		
System Name:	_____	Type:	CWS NTCWS
Address:	_____	Size:	>100,000
	_____		10,001 to 100,000
	_____		3,301 to 10,000
	_____		501 to 3,300
	_____		101 to 500
Phone:	_____		≤100
Contact:	_____		

CERTIFICATION OF SAMPLING SITES

LEAD SOLDER SITES	
# of single-family structures with copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 1)	_____
# of multi-family structures with copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 1)	_____
# of buildings containing copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 2)	_____
# of sites that contain copper pipes with lead solder installed before 1983 (to be used only if other conditions have been exhausted) (Tier 3)	_____
TOTAL	_____
The following sources have been explored to determine the number of structures which have interior lead pipe or copper pipe with lead solder.	
Plumbing and/or building codes	_____
Plumbing and/or building permits	_____
Contacts within the building department, municipal clerk's office, or state regulatory agencies for historical documentation of the service area development	_____
Water quality data	_____
Other resources which PWS may utilize.	
Interviews with building inspectors	_____
Survey of service area plumbers about when and where lead solder was used from 1982 to present	_____
Survey residents in sections of the service area where lead pipe and/or copper pipe with lead solder is suspected to exist	_____
Interviews with local contractors and developers	_____
Explanation of Tier 2 and Tier 3 sites (attach additional pages, if necessary)	_____

SAMPLE SITE IDENTIFICATION AND CERTIFICATION

CERTIFICATION OF SAMPLING SITES

LEAD SERVICE LINE SITES

of samples required to be drawn from lead service line sites _____

of samples actually drawn from lead service line sites _____

Difference (explain differences other than zero) _____

The following sources have been explored to determine the number of lead service lines in the distribution system.

Distribution system maps and record drawings _____

Information collected for the presence of lead and copper as required under §141.42 of the Code of Federal Regulations _____

Capitol improvement plans and/or master plans for distribution system development _____

Current and historical standard operating procedures and/or operation and maintenance (O & M) manuals for the type of materials used for service connections _____

Utility records including meter installation records, customer complaint investigations and all historical documentation which indicate and/or confirm the location of lead service connections _____

Existing water quality data for indications of "troubled areas" _____

Other sources which PWS utilized

Interviews with senior personnel _____

Conduct service line sampling where lead service lines are suspected to exist but their presence is not confirmed _____

Review of permit files _____

Community survey _____

Review of USGS maps and records _____

Interviews with pipe suppliers, contractors, and/or developers _____

Explanation of fewer than 50% LSL sites identified (attach additional pages, if necessary) _____

CERTIFICATION OF COLLECTION METHODS

I certify that:

Each first-draw tap sample for lead and copper is one liter in volume and has stood motionless in the plumbing system of each sampling site for at least six hours.

Each first-draw sample collected from a single-family residence has been collected from the cold water kitchen tap or bathroom sink tap.

Each first-draw sample collected from a non-residential building has been collected at an interior tap from which water is typically drawn for consumption.

Each first-draw sample collected during an annual or triennial monitoring period has been collected in the months of June, July, August or September.

Each resident who volunteered to collect tap water samples from his or her home has been properly instructed by (insert water system's name) _____ in the proper methods for collecting lead and copper samples. I do not challenge the accuracy of those sampling results. Enclosed is a copy of the material distributed to residents explaining the proper collection methods, and a list of the residents who performed sampling.

SAMPLE-SITE IDENTIFICATION AND CERTIFICATION

RESULTS OF MONITORING

The results of lead and copper tap water samples must be attached to this document.

of samples required _____ # of samples submitted _____

90th Percentile Pb _____ 90th Percentile Cu _____

The results of water quality parameter samples must be attached to this document.

of samples required _____ # of tap samples submitted _____

of entry point samples required _____ # of entry point samples submitted _____

CHANGE OF SAMPLING SITES

Original site address: _____

New site address: _____

Distance between sites (approximately): _____

Targeting criteria: New _____ Old _____

Reason for change (attach additional pages, if necessary): _____

Signature: _____ Date: _____

Name: _____ Title: _____

SUGGESTED DIRECTIONS FOR HOMEOWNER

TAP SAMPLE COLLECTION PROCEDURES

These samples are being collected to determine the lead and copper levels in your tap water. This sampling effort is required by the U.S. Environmental Protection Agency and the Pennsylvania Department of Environmental Protection, and is being accomplished through the cooperation of homeowners and residents.

A sample is to be collected after water has been sitting in the pipes for an extended period of time (i.e., no water use during this period). Due to this requirement, either early mornings or evenings upon returning home from work are the best times for collecting samples. The collection procedure is described in more detail below:

1. Prior arrangements will be made with the customer to coordinate the sample collection event. Dates will be set for sample kit delivery and pick-up by water department staff.
2. **A minimum six (6) hour period during which there is no water use throughout the house** must be achieved prior to sampling. The water department recommends that either early mornings or evenings upon returning home are the best sampling times to ensure that the necessary stagnant water conditions exist.
3. A **kitchen or bathroom cold-water faucet** is to be used for sampling. Place the sample bottle (open) below the faucet and gently open the cold water tap. Fill the sample bottle to the line marked "**1,000- mL**" and turn off the water.
4. Tightly cap the sample bottle and place it in the sample kit provided. Please review the sample kit label at this time to ensure that all information contained on the label is correct.
5. If any plumbing repairs or replacement has been done in the home since the previous sampling event, note this information on the label as provided.
6. Place the sample kit outside of the residence in the location of the kit's delivery so that department staff may pick up the sample kit.
7. Results from this monitoring effort will be provided to participating customers when reports are generated for the State unless excessive lead and/or copper levels are found. In those cases, immediate notification will be provided (usually ten (10) working days from the time of sample collection).

Call _____ at _____ if you have any questions regarding these instructions.

TO BE COMPLETED BY RESIDENT:

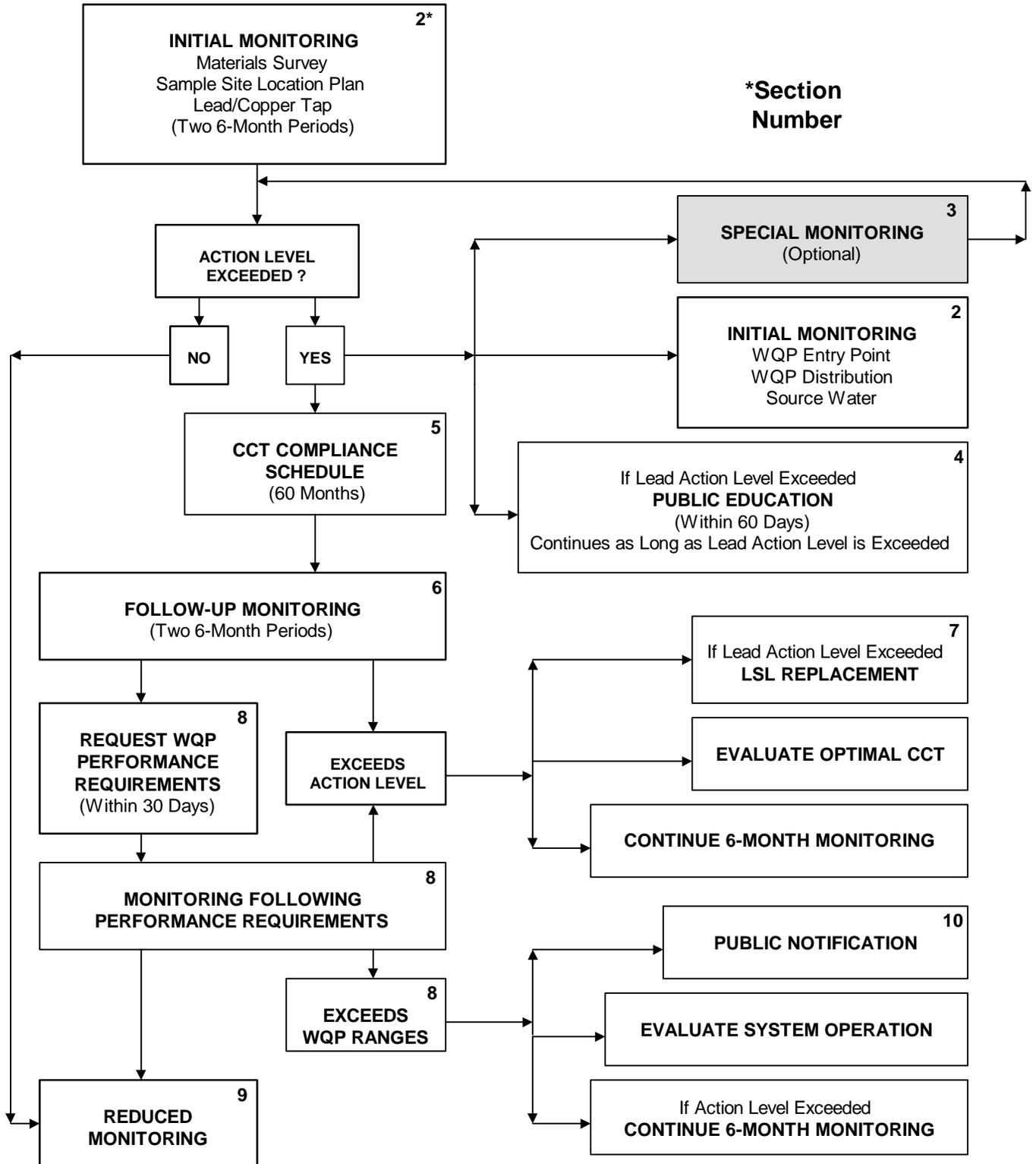
Water was last used: Time: _____ Date: _____

Sample was collected: Time: _____ Date: _____

I have read the above directions and have taken a tap sample in accordance with these directions.

Signature: _____ Date: _____

SECTION 3



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

SPECIAL MONITORING

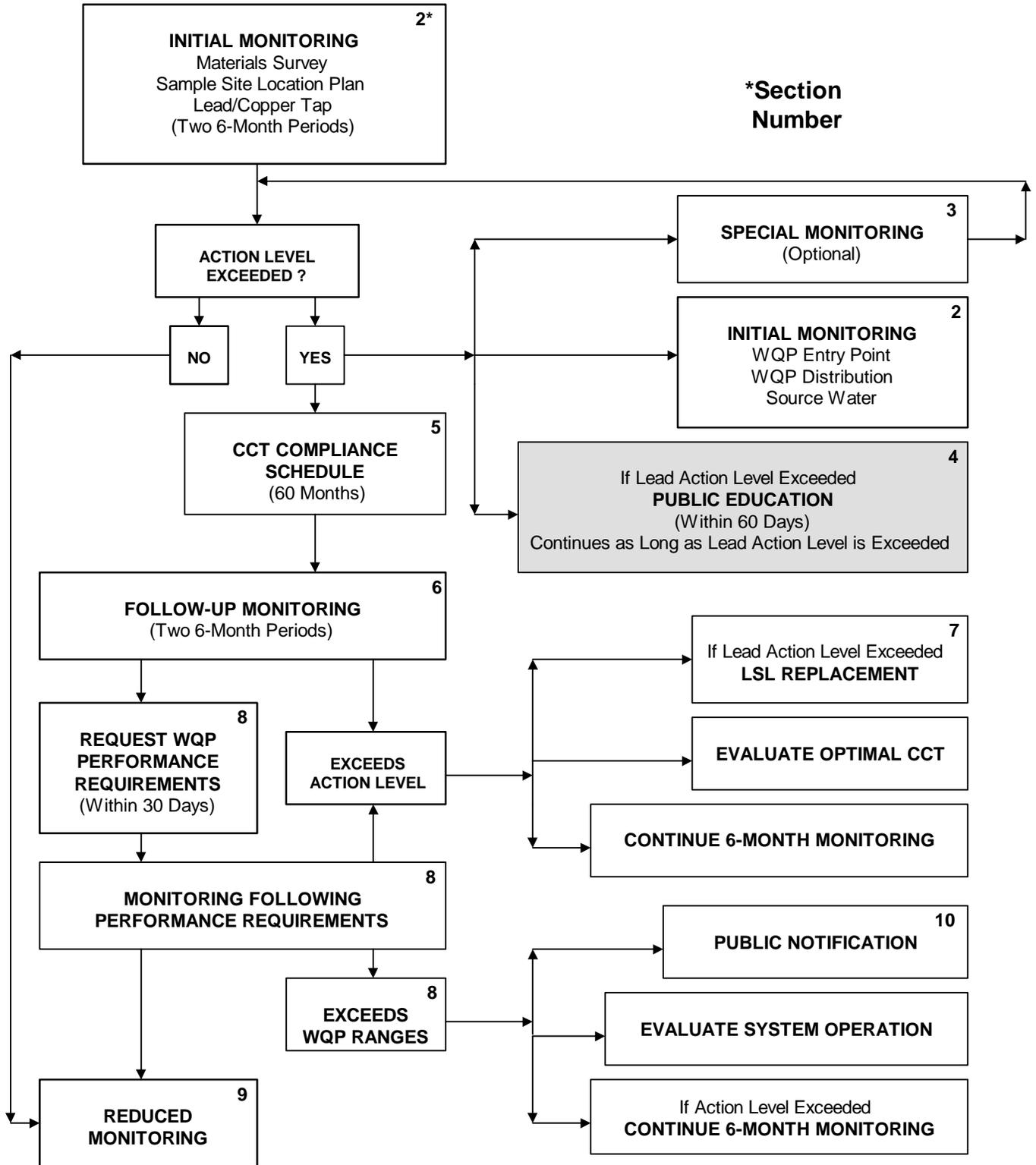
After completing initial monitoring and prior to initiation of construction or modification of corrosion control treatment facilities, **a small or medium system** may collect special lead and copper tap samples at its option.

Special lead and copper tap monitoring includes sampling at the same number of sites as initial lead and copper tap monitoring.

If a medium or small water system meets the lead and copper action levels during two consecutive six-month special monitoring periods, the system is deemed to have optimized corrosion control and may discontinue the compliance activities and proceed directly to reduced monitoring (Section 9). If a system meets the lead action level during a special monitoring period, the system may discontinue public education.

If a medium or small water system exceeds an action level during any monitoring period after discontinuing compliance activities, the system must resume completion of the applicable compliance activities. DEP may require a system to repeat compliance activities previously completed or undertake additional activities where the department determines that such action is necessary to properly comply with corrosion control treatment requirements.

SECTION 4



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

PUBLIC EDUCATION

All public water systems exceeding the lead action level must deliver a public education (PE) program to their customers within 60 days. The PE program must be continued as long as the system exceeds the lead action level.

CONTENT

The PE program informs the public about the adverse health effects of lead and explains the steps people can take in their homes to reduce exposure to lead in drinking water.

The program includes mandatory language established by EPA for newspapers and water bill inserts, pamphlets and brochures, and public service announcements. Any additional information presented by a system shall be consistent with the mandatory language. If appropriate, public education materials shall be bilingual or multilingual. **Copies of sample PE packets for community and nontransient noncommunity water systems are available through the DEP district offices.**

1. Newspapers, water bill inserts, pamphlets, and brochures:

A water system shall include the mandatory language in all of the printed materials it distributes through its PE program.

In addition to the water bill insert, the water supplier shall provide the following alert on the water bill itself in large print:

“Some homes in this community have elevated lead levels in their drinking water. Lead can pose a significant risk to your health. Please read the enclosed notice for further information.”

If a water supplier is unable to include the alert verbatim on the water bill because of insufficient space on the bill, the water supplier may request a minor wording change so long as the content remains essentially unaffected.

2. Public service announcements:

A water system shall include the following information in all public service announcements submitted under its PE program to television and radio stations for broadcasting:

“Why should everyone want to know the facts about lead and drinking water? Because unhealthy amounts of lead can enter drinking water through the plumbing in your home. That’s why I urge you to do what I did. I had my water tested for [insert free or \$ per sample]. You can contact the [insert the name of the water system] for information on testing and on simple ways to reduce your exposure to lead in drinking water.

To have your water tested for lead, or to get more information about this public health concern, please call [insert the phone number of the water system].”

DELIVERY

The PE program must be delivered to your entire service area, and targeted to high-risk segments of the population (i.e., community members who are either more susceptible to the adverse effects of lead or who are at greater risk of exposure to lead in drinking water).

1. Requirements for Community Water Systems:

	Bill Insert	Pamphlet/ Brochure	Newspaper Announcement	Public Service Announcement	Letter to State
Every 6 Months				X	
Every 12 Months	X	X	X		
December 31 of Each Year					X

Section 4-Public Education

- If the billing cycle or billing form prevents distribution of the bill insert within 60 days of the lead action level exceedance, the water supplier shall deliver the information required in one of the following ways:
 1. A separate direct mailing, or
 2. Hand delivery.
- Pamphlets or brochures must be delivered every 12 months to specified facilities and organizations, including public schools and/or local school boards; city or county health departments; Women, Infants, and Children (WIC) and/or Head Start programs (if available); public and private hospitals or clinics; pediatricians; family planning clinics; and local welfare agencies.
- Public service announcements must be released every six months to at least five of the radio and television stations with the largest audiences that broadcast to the community served by the water system.
- The mandatory language must be submitted to the editorial departments of the major daily and weekly newspapers circulated throughout the community every 12 months.
- A letter must be submitted to DEP by December 31 of each year demonstrating that the system has delivered the PE materials that meet the regulation's content and delivery requirements. This letter must include a list of all newspapers, radio and television stations, facilities, and organizations to which the water supplier delivered PE materials during the previous year.

2. Requirements for Nontransient Noncommunity Water Systems:

	Poster	Pamphlet	Letter to State
Every 12 Months	X	X	
December 31 of Each Year			X

- The water supplier shall post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system and distribute informational pamphlets and/or brochures on lead in drinking water to each person routinely served by the nontransient noncommunity water system.
- A letter must be submitted to DEP by December 31 of each year demonstrating that the water supplier has delivered the PE materials that meet the regulation's content and delivery requirements.

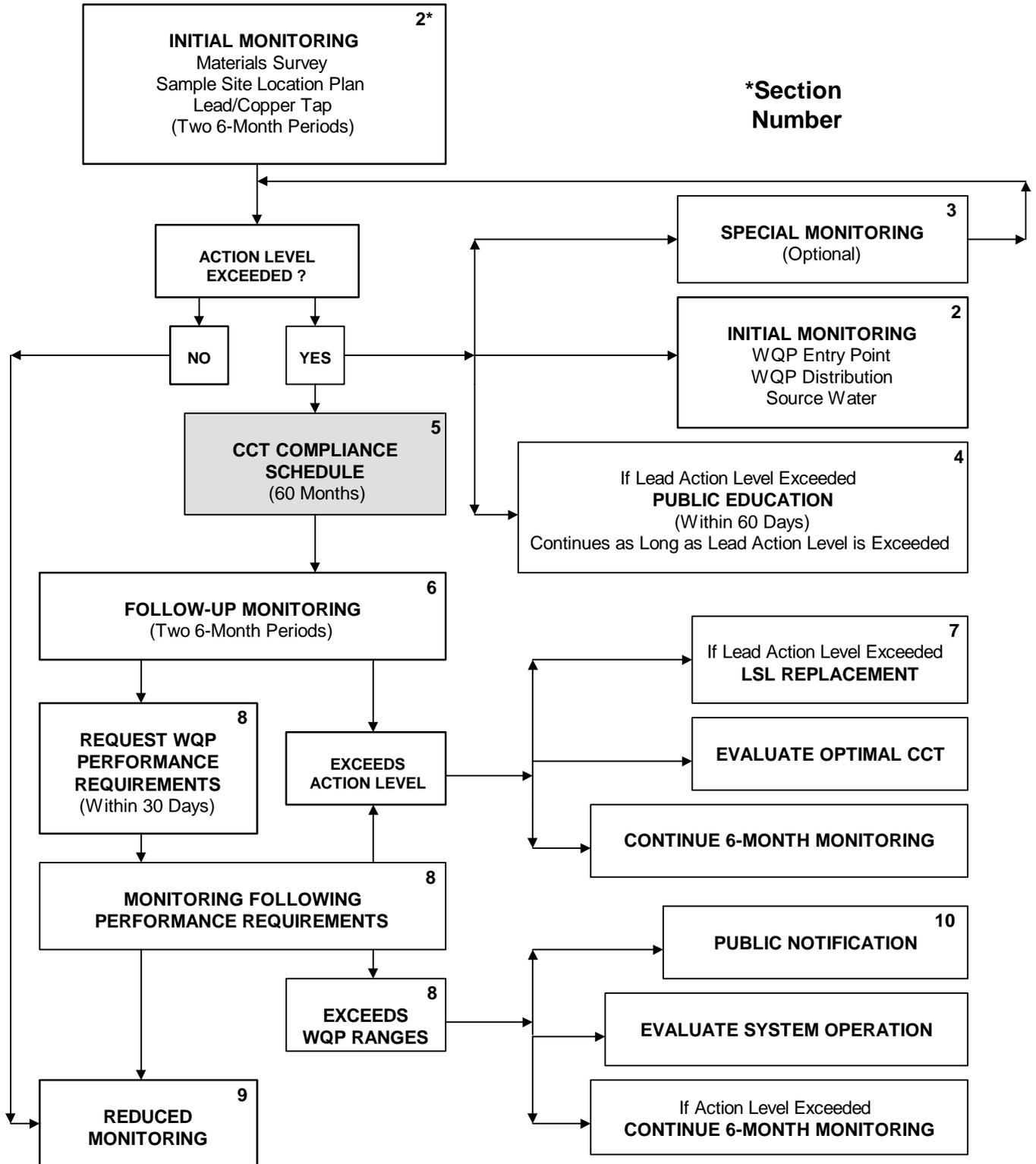
DISCONTINUATION OF PUBLIC EDUCATION PROGRAM

A water supplier may discontinue implementation of its PE program if the system does not exceed the lead action level during the most recent six-month monitoring period. The system shall resume PE if it exceeds the lead action level at any time during any future monitoring period.

NOTIFICATION OF CUSTOMER MONITORING

A water supplier that fails to meet the lead action level shall provide information regarding laboratories certified by DEP for lead and copper testing to any customer who requests it.

SECTION 5



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

CCT COMPLIANCE SCHEDULE

OPTIMAL CORROSION CONTROL TREATMENT

All systems subject to the Lead and Copper Rule must achieve optimal corrosion control treatment (OCCT). OCCT is defined as follows:

OCCT minimizes the lead and copper concentrations at users' taps while ensuring that the treatment does not cause the system to violate any primary maximum contaminant level.

A system may achieve OCCT in one of the following ways:

1. **Small and medium systems can achieve OCCT by** not exceeding either action level for lead and copper tap monitoring during two consecutive six-month monitoring periods.
2. **Large systems can achieve OCCT if**, during two consecutive six-month monitoring periods, their lead and copper tap monitoring results do not exceed the action levels at the 90th percentile and the difference between the 90th percentile lead level and the highest source water lead concentration is less than 0.005 mg/L.
3. **Any system can achieve OCCT when** the system installs new CCT facilities or modifies existing treatment and operates in compliance with the water quality parameter (WQP) performance standards specified for that system by DEP.

Systems requiring construction or modification of treatment facilities to achieve OCCT must adhere to a compliance schedule. Modification of treatment facilities includes changes in treatment chemicals, with or without modifications to chemical feed equipment.

COMPLIANCE MILESTONES FOR LARGE SYSTEMS

The schedule for large systems contains fixed dates for compliance as follows:

COMPLIANCE MILESTONES FOR LARGE SYSTEMS	
<i>Activity</i>	<i>Date</i>
Conduct Initial Monitoring	
Submit CCT Feasibility Study	June 30, 1994
Submit Permit Application	March 31, 1995
Complete Construction of CCT Facilities	December 31, 1996
Conduct Follow-up Monitoring	
Request Department to Designate WQP Performance Requirements	January 31, 1998
Conduct Routine Monitoring	

COMPLIANCE MILESTONES FOR SMALL AND MEDIUM SYSTEMS

The following is the compliance schedule for small and medium systems. Because initial monitoring is phased-in by system size and CCT is required only if a small or medium system exceeds an action level, this schedule begins the first day after the end of the monitoring period in which the system first exceeds an action level.

COMPLIANCE MILESTONES FOR SMALL AND MEDIUM SYSTEMS REQUIRING CCT	
<i>Activity</i>	<i>Months from Exceeding an Action Level</i>
Conduct Initial Monitoring	
Submit CCT Feasibility Study	Within 18 Months
Submit Permit Application	Within 30 Months
Initiate Construction of CCT Facilities	Within 48 Months
Complete Construction of CCT Facilities	Within 60 Months
Conduct Follow-up Monitoring	
Request Department to Designate WQP Performance Requirements Within 30 Days of the End of the Follow-up Monitoring Period	
Conduct Routine Monitoring	

Small and medium water systems that currently have CCT in place, may be able to optimize treatment by changing treatment chemicals. Departmental approval for a change in treatment chemicals can be obtained through a permit amendment. A small or medium system is deemed to have OCCT if the system meets both action levels during each of two consecutive six-month monitoring periods. Consequently, if a system can make the chemical change and conduct

two subsequent rounds of tap monitoring without exceeding an action level prior to the CCT feasibility due date, the system has optimized CCT and is not required to submit a feasibility study. The system may then proceed to a reduced lead and copper tap monitoring schedule (Section 9). DEP will establish WQP performance requirements (Section 8) as part of the system's amended operation permit.

CCT FEASIBILITY STUDY

The Lead and Copper Rule requires all large systems and those small and medium systems that exceed either the lead or copper action level to prepare CCT feasibility studies. Large systems must complete and submit their studies to DEP by June 1994. Studies for small and medium systems must be submitted within 18 months of exceeding an action level.

The purpose of the study is to identify corrosion control priorities, evaluate corrosion control alternatives, and recommend OCCT.

DEP encourages systems to conduct desktop evaluations of treatment alternatives, with emphasis on the use of data from systems with successful CCT under analogous conditions. Demonstration testing, which usually involves either bench or full-scale testing using pipe loops or metal coupons, will be required only when a thorough desktop evaluation is insufficient to provide a confident treatment recommendation. Demonstration testing also may be required when a system continues to exceed an action level after CCT has been installed.

As a minimum, the system should include the information required in a basic study as outlined below:

1. A sample site location plan;
2. A summary of all lead and copper and WQP monitoring results;
3. A desktop evaluation of alkalinity and pH adjustment, calcium hardness adjustment, and corrosion inhibitor addition or a combination of these treatments . The evaluation shall recommend OCCT and WQP performance requirements for the selected treatment. If source water treatment is needed to achieve OCCT, the system shall evaluate the source water treatments including ion exchange, reverse osmosis, lime softening and coagulation/ filtration; and

4. A proposed schedule for completion of the remaining CCT compliance steps including, but not limited to, treatment design and permit application submittal, financing and construction, and initiation of operation.

A demonstration study should include the evaluation of CCTs using pipe rig/loop tests, metal coupon tests or partial system tests.

DEP has designed a program to match analogous CCT data for **small systems using groundwater sources**. This project may provide data to small systems that would significantly reduce their efforts and costs to prepare desktop feasibility studies. Contact the regional DEP office for more information on the CCT Analogous Treatment Program.

A Basic Feasibility Study Guide is available which includes a desktop evaluation form and describes additional information required for a complete study. A system that prepares a complete basic feasibility study in accordance with the instructions will generally comply with the Lead and Copper Rule requirements pertaining to CCT studies, select the most feasible alternative, minimize the cost impact of treatment and, in most cases, eliminate the need for demonstration testing. This guide is available from the district or regional DEP offices.

PERMIT REQUIREMENTS

Systems requiring construction or modification of CCT facilities under the Lead and Copper Rule must first obtain the appropriate permit approvals from DEP.

The permit requirements include a two-permit process which is consistent with current permitting procedures. The two permits include a construction permit or amendment and an operation permit or amendment.

Construction Permit and Permit Amendments

A water system must first submit an application for a construction permit for a newly-created system or an amended construction permit for a currently-permitted system for CCT facilities by the applicable deadline (see Compliance Milestones). The application shall include all applicable data including plans and specifications for the selected CCT and a recommendation for WQP performance requirements. The construction permit allows the system to construct the approved facilities.

Small community water systems with high quality groundwater can qualify for a **minor permit amendment** if the system submits a written request to DEP:

1. The system is a small system;
2. The sources of supply for the system are not surface water sources;
3. Except for CCT, the sources require treatment no greater than disinfection; and
4. The proposed CCT is limited to alkalinity or pH adjustment, or both.

Nontransient noncommunity water systems may qualify for **permit-by-rule** under the same criteria as mentioned above if the system files a brief description of the proposed treatment, including recommended WQP performance requirements for OCCT, on forms acceptable to DEP. Descriptions of modifications may be filed prior to construction if the system desires technical assistance, but shall be filed within 30 days of initiation of operation of the modification.

Operation Permits and Permit Amendments

Following completion of construction and DEP preoperation inspection, the system shall obtain an operation permit or an amended operation permit prior to initiation of operation of CCT facilities. **(Note: Nontransient noncommunity water systems that received a permit-by-rule are not required to obtain an operation permit or an amended operation permit until after follow-up monitoring is completed.)** DEP will not issue an operation permit unless the water system complies with the operation and maintenance plan requirements and the operator certification and training requirements (Section 11).

After follow-up monitoring (Section 6) is completed, all systems shall submit a request for DEP designation of OCCT performance requirements based on the appropriate schedule (Section 8) and DEP will issue an amended operation permit designating the performance requirements.

Design Standards

CCT facilities shall be designed to satisfy the following standards:

1. A minimum pH measured in all distribution samples of at least 7.0; and
2. For community and nontransient noncommunity systems that received a minor permit amendment and a permit-by-rule respectively, a minimum alkalinity measured in all distribution samples of 20 mg/L.

Fees

A system receiving permitting and related services from DEP for CCT facilities shall pay the applicable fees by a check in the amount specified to the "Commonwealth of Pennsylvania."

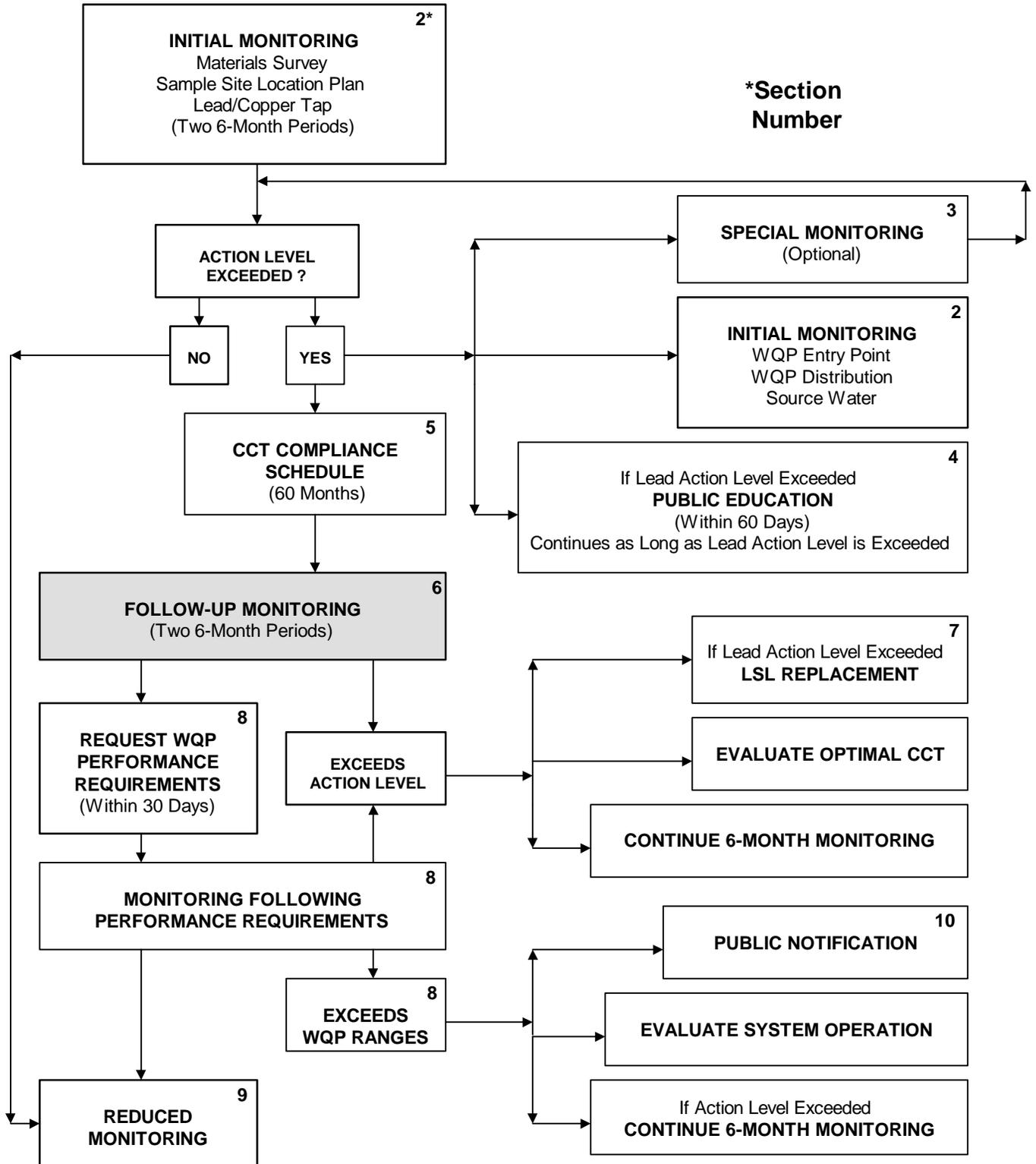
An application for a construction permit or major permit amendment shall be accompanied by payment for the following fee:

System Size	Fee
Small	\$250.00
Medium	\$500.00
Large	\$1,750.00

A system not required to submit an application for a construction permit or major permit amendment shall submit payment for the applicable fee below with its request for DEP designation of OCCT performance requirements.

System Size	Fee
Small	\$125.00
Medium	\$375.00
Large	\$1,250.00

SECTION 6



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

FOLLOW-UP MONITORING

Systems that have completed construction or modification of corrosion control treatment facilities are required to conduct follow-up monitoring. Follow-up monitoring demonstrates the effectiveness of the treatment in reducing lead and copper at customers' taps. These results provide the basis for corrosion control treatment performance requirements (Section 8).

LEAD AND COPPER TAP MONITORING

Follow-up lead and copper tap monitoring for water systems consists of two consecutive six-month periods at the same number of sites as initial monitoring. A system may begin follow-up monitoring any time following issuance of an operations permit for CCT facilities, as long as the monitoring is conducted by the deadlines given below.

A small or medium water system shall monitor during each of two consecutive six-month monitoring periods following issuance of an operations permit for CCT facilities but beginning no later than 60 months from the date an action level was exceeded A small or medium system that does not exceed the lead and copper action levels during follow-up monitoring may go to reduced monitoring (Section 9).

A large water system shall monitor during each of two consecutive six-month monitoring periods beginning no later than January 1, 1997.

A system which exceeds the lead action level after construction or modification of corrosion control treatment facilities shall begin lead service line replacement (Section 7).

WATER QUALITY PARAMETER MONITORING

Follow-up water quality parameter monitoring for water systems consists of collection of distribution samples during each specified monitoring period at the same number of sites as initial monitoring and at each entry point at least once every two weeks.

The water quality parameters shall be measured as follows.

1. **At sites within the distribution system, two sets of samples taken on different days from the same sample sites for:**

- pH;

- Alkalinity;
- Orthophosphate, when a phosphate inhibitor is used;
- Silica, when a silicate inhibitor is used; and
- Calcium, when calcium carbonate stabilization is used.

2. **At each entry point, one set of samples every two weeks for:**

- pH;
- When alkalinity is adjusted as part of corrosion control treatment, a reading of the dosage rate of the chemical used to adjust the alkalinity, and the alkalinity concentration; and
- When a corrosion inhibitor is used as part of corrosion control treatment, a reading of the dosage rate of the inhibitor used, and the concentration of orthophosphate or silica, whichever is applicable.

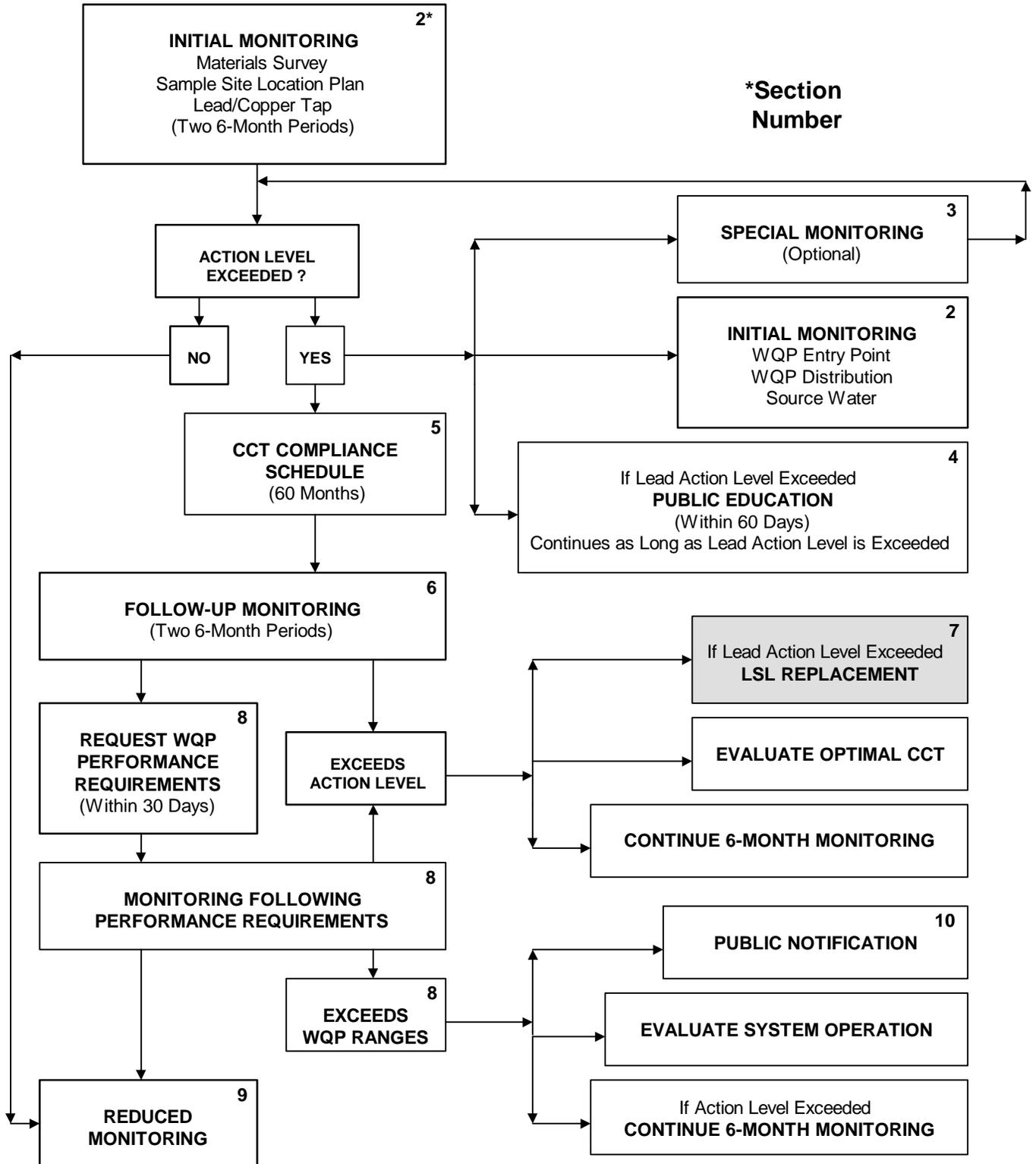
A small or medium water system shall measure the water quality parameters during each six-month monitoring period in which the system exceeds either the lead or copper actionlevel. Distribution system monitoring shall be conducted once during the monitoring period and biweekly entry point monitoring shall continue as long as the system exceeds the action level.

A large water system shall measure the water quality parameters during each of the two consecutive six-month monitoring periods in which the system conducts lead and copper tap monitoring.

SOURCE WATER MONITORING

A system which installs source water treatment shall monitor the source water at source water treatment entry points for the parameter(s) for which the treatment was installed. The system shall monitor source water during the two consecutive six-month monitoring periods. Any other system which exceeds either the lead or copper action level while conducting follow-up lead and copper tap monitoring shall collect one source water sample from each entry point within six months after the exceedance for the parameter(s) exceeding the action level.

SECTION 7



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

LEAD SERVICE LINE REPLACEMENT

Under the Lead and Copper Rule, systems that still exceed the lead action level during lead and copper tap monitoring conducted after construction or modification of corrosion control treatment facilities must initiate lead service line (LSL) replacement. Water suppliers must replace LSLs at a rate of at least 7 percent per year beginning the next 6-month monitoring period following the action level exceedance. The water supplier need only replace those LSLs which exceed the lead action level when specifically sampled for this determination as outlined below:

- **1 liter sample size;**
- **First-draw after six hour standing time in the LSL;**
- **Collected in one of the following three ways:**
 1. **At the tap, flush the volume of water between the tap and the LSL. The volume of water shall be calculated based on the interior diameter and length of the pipe between the tap and the LSL; or**
 2. **Tap directly into the LSL; or**
 3. **If the sampling site is a single-family residence, allow the water to run until there is a significant change in temperature which would be indicative of water that has been standing in the LSL.**

When replacing LSLs, the water supplier must replace the entire line unless the supplier demonstrates to the satisfaction of DEP that the supplier does not control the entire line. The supplier is presumed to control the entire line (up to the building inlet) unless he demonstrates otherwise.

A water supplier may cease replacing LSLs if the system conducts lead and copper tap monitoring during two consecutive monitoring periods without exceeding the lead action level.

REPORTING REQUIREMENTS

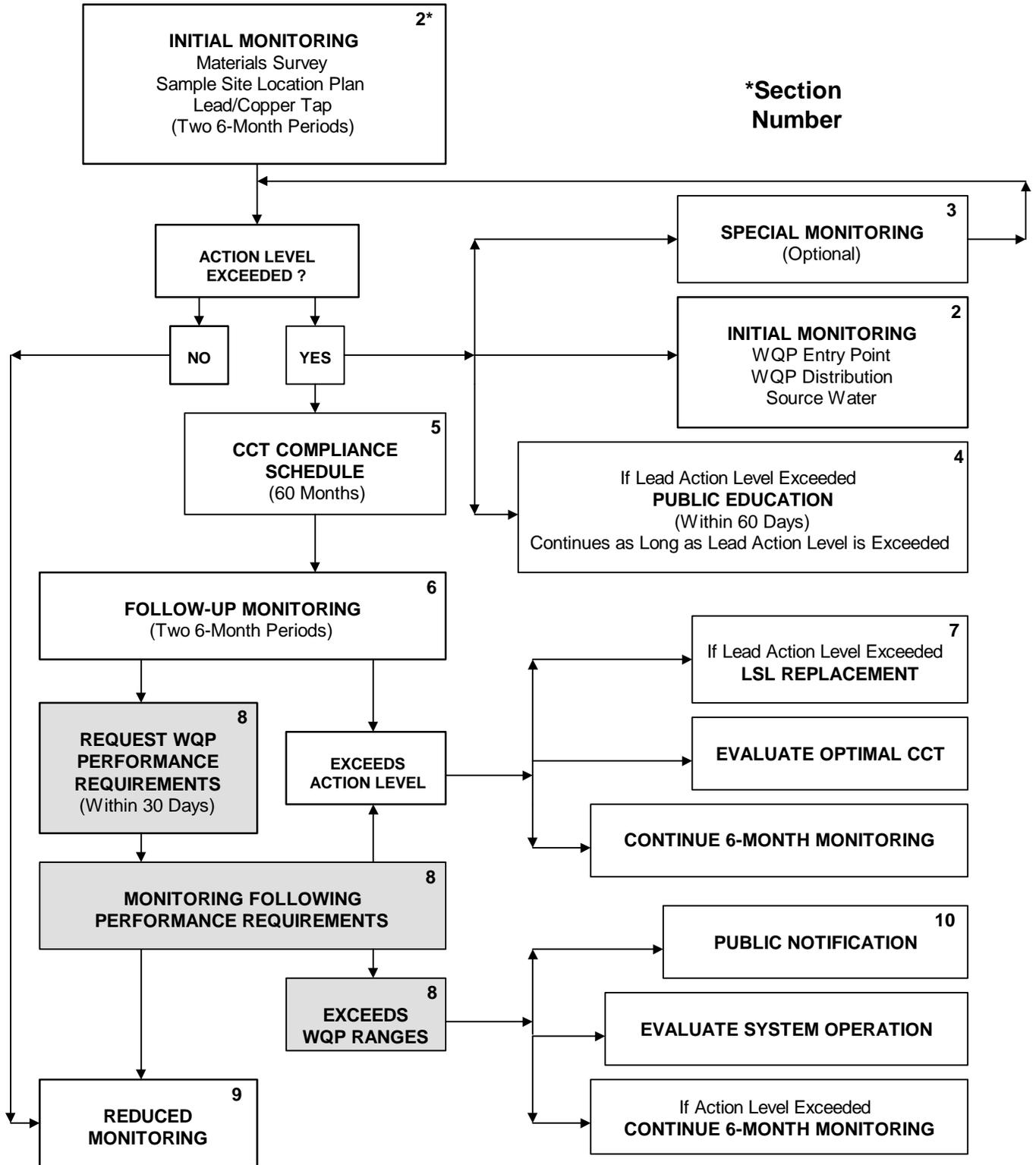
A water system conducting LSL replacement shall, within the first three months of the first year of LSL replacement, submit to DEP the following:

1. Evidence that a materials evaluation of the system has been conducted;
2. A schedule for replacing at least 7 percent of the LSLs identified in the materials evaluation; and
3. For a water system which rebuts the presumption that the system has control over LSLs, a legal opinion describing the legal authority which limits the system's control over the LSLs and the extent of the system's control.

A water system conducting LSL replacement shall notify DEP in writing that the system has replaced at least 7 percent of the LSLs identified in the materials evaluation, or that the results of lead sampling from individual lines scheduled for replacement do not exceed 0.015 mg/L. The notification shall be given by the end of each year of LSL replacement and contain the following information:

1. The name, address and public water system identification number of the public water system;
2. The number of LSLs scheduled for replacement during the previous year;
3. The number and location of LSLs actually replaced during the year; and
4. If LSL sampling is completed in individual LSLs, the date and the results of this sampling and method of sampling used.

SECTION 8



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

OCCT PERFORMANCE REQUIREMENTS

Systems installing corrosion control treatment (CCT) and/or source water treatment will be required to operate this treatment within specified performance standards designated by DEP.

Upon completion of required follow-up monitoring conducted after construction or modification of CCT and/or source water treatment facilities, the water system shall submit to DEP a request for designation of optimal corrosion control treatment (OCCT) performance requirements. The request shall include as a minimum a summary of analyses conducted during follow-up monitoring and recommended performance requirements.

WQP PERFORMANCE REQUIREMENTS

DEP will act upon a system's request for DEP's designation of WQP performance requirements following the time table below:

System Size	Deadline for System Request to DEP to Designate Performance Requirements	DEP Will Designate Performance Requirements
<i>Large</i>	January 31, 1998	By June 30, 1998
<i>Small & Medium</i>	Within 30 days after follow-up monitoring period	Within 18 months after completion of construction

Depending on the type of CCT, the performance requirements will be designated as follows:

- Minimum pH value or range at each entry point;
- Minimum pH value in distribution samples;
- If inhibitor used, minimum inhibitor concentration or range at each entry point and in distribution samples;

- If alkalinity adjusted, minimum alkalinity concentration or range at each entry point and in distribution samples; and
- If calcium carbonate stabilization used, minimum calcium concentration or range in distribution samples.

The performance requirements will be specified in the amended operation permit.

SOURCE WATER TREATMENT PERFORMANCE REQUIREMENTS

DEP will act upon a system's request for DEP's designation of source water treatment performance requirements when WQP performance requirements are established for the system.

The performance requirements will be specified in the amended operation permit.

MONITORING AFTER PERFORMANCE REQUIREMENTS ESTABLISHED

A system shall conduct six-month monitoring beginning no later than the next six-month monitoring period following DEP's designation of OCCT WQP performance requirements and/or source water performance requirements.

- **All large systems** are required to conduct six-month monitoring after performance requirements are established until they qualify for reduced monitoring (Section 9).
- **A small or medium system** is required to conduct this monitoring only if the system has not yet qualified for reduced monitoring (i.e., the system exceeded an action level during follow-up monitoring).

Lead and Copper Tap Monitoring

A system required to conduct lead and copper tap monitoring shall monitor during each six-month monitoring period at the same number of sites as initial monitoring until the system qualifies for reduced monitoring.

WQP Performance Monitoring

A system required to conduct WQP performance monitoring shall measure the applicable WQPs in the distribution system during each six-month monitoring period at the same number of sites as initial WQP monitoring and at each entry

point at least once every two weeks. The results of this monitoring will be used by DEP in determining compliance with the WQP performance requirements.

A large water system shall conduct this monitoring during each six-month monitoring period until the system qualifies for reduced monitoring.

A small or medium system which is conducting lead and copper tap monitoring as outlined above shall measure the WQPs during each six-month monitoring period in which the system exceeds either the lead or copper action level. Distribution system monitoring shall be conducted at least once during the monitoring period and biweekly entry point monitoring shall continue as long as the system exceeds the action level.

A system may take a confirmation sample for any WQP value no later than three days after the first sample. If a confirmation sample is taken, the result shall be averaged with the first sampling result and the average shall be used for compliance determinations.

Source Water Monitoring

A system which is conducting lead and copper tap monitoring as outlined above shall monitor for the parameters exceeding the action level at each entry point within six months of the action level exceedance.

For systems which have installed source water treatment, the results of this monitoring will be used by DEP in determining compliance with source water treatment performance requirements.

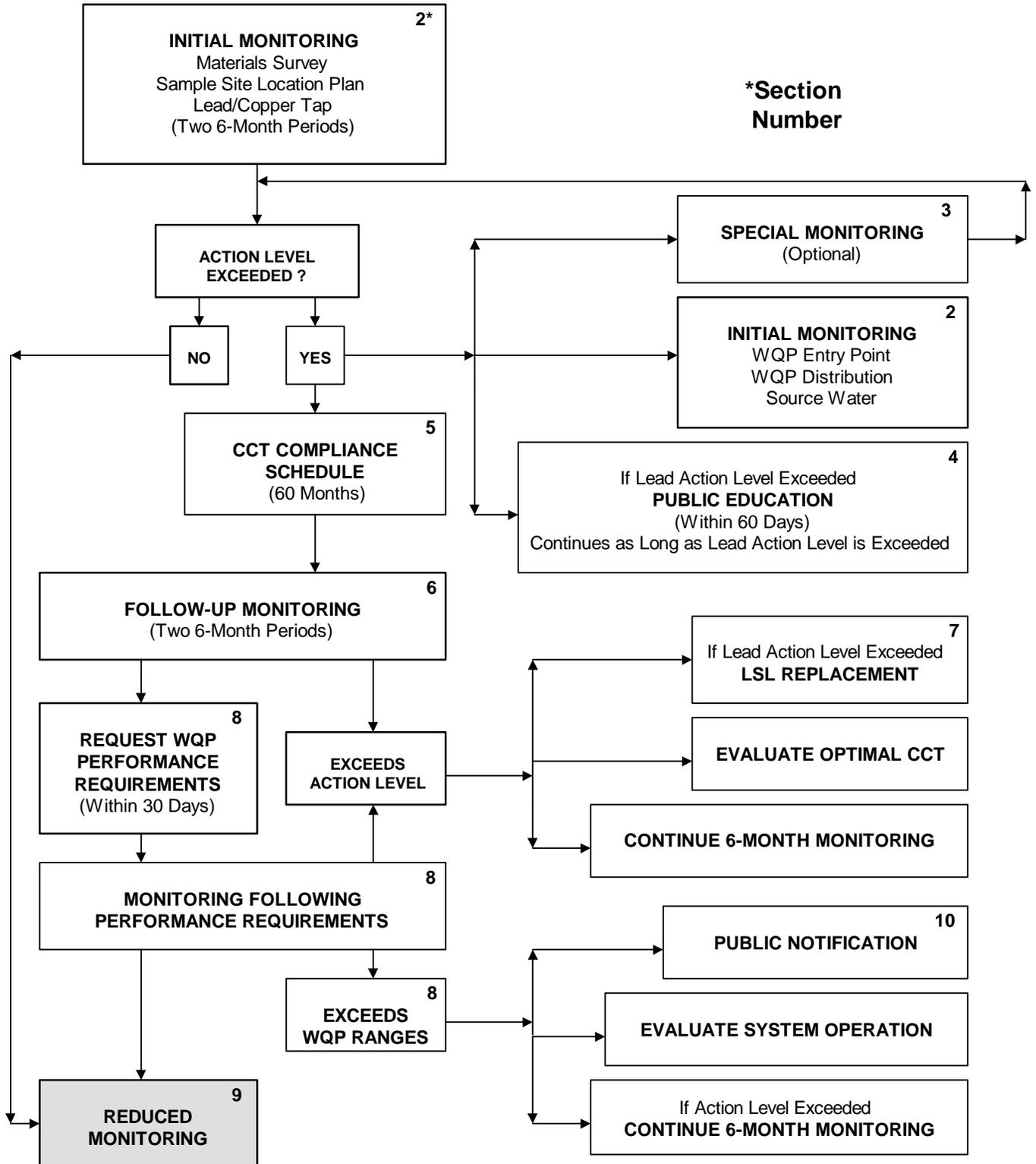
DETERMINING COMPLIANCE WITH PERFORMANCE REQUIREMENTS

A system that operates within the specified ranges for each applicable parameter is in compliance with the treatment technique and has achieved OCCT.

A system that fails to operate within the range of performance requirements for the WQPs and/or source water monitoring shall:

- Issue public notification (Section 10);
- Conduct 6-month monitoring at the original number of sampling sites; and
- Evaluate system operation.

SECTION 9



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

REDUCED MONITORING

LEAD AND COPPER TAP WATER MONITORING

A **community water system** conducting reduced lead and copper tap monitoring shall collect one sample from the following number of sample sites:

SYSTEM SIZE	NO. OF SAMPLING SITES
>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

A **nontransient noncommunity water system** may reduce the number of sample sites to **five**, regardless of population served.

Annual Lead and Copper Tap Monitoring

Systems may reduce the number of sample sites and reduce the frequency of sampling to **once per year** in one of the following ways:

1. **Small and medium water systems** can automatically qualify for reduced monitoring by not exceeding the lead and copper action levels during each of two consecutive six-month monitoring periods.
2. **Large water systems** can qualify for reduced monitoring by not exceeding the lead and copper action levels during each of two consecutive six-month monitoring periods and if the difference between the 90th percentile lead level and the highest source water lead concentration is less than 0.005 mg/L.

3. Any water system may request that DEP allow the system to reduce the frequency of monitoring to once per year if the system has maintained the range of values for the optimal corrosion control treatment (OCCT) water quality parameter (WQP) performance requirements during each of two consecutive six-month monitoring periods.

Triennial Lead and Copper Tap Monitoring

Systems may further reduce the frequency of sampling to **once every three years** at the reduced number of sample sites in one of the following ways:

1. Small or medium water systems can automatically qualify for reduced monitoring by not exceeding the lead and copper action levels during three consecutive years of monitoring, including initial monitoring; or
2. Any water system may request that DEP allow the system to reduce the frequency of monitoring to once every three years if the system has maintained the range of values for OCCT WQP performance requirements monitoring.

Sample Sites

Systems that qualify for reduced monitoring shall collect their samples from the targeted pool of sampling sites identified in their sample site location plan. Systems must maintain the initial ratio of Tier1/Tier 2 or 3 sites.

Timing

Systems sampling annually or triennially shall conduct the lead and copper tap sampling **between June 1 and September 30**.

Triennial monitoring shall be conducted during the last year of each three-year compliance period **(i.e., 1998, 2001, 2004, ...)**.

Request for Reduced Monitoring

A system requesting reduced lead and copper tap monitoring under item #3 above shall submit that request to DEP. The request shall include:

1. A summary of lead and copper tap monitoring results, and
2. A summary of WQP monitoring results.

The results shall demonstrate that the system qualifies for reduced monitoring. DEP will review the information and notify the water supplier of its decision and the basis for that decision.

Reduced Lead and Copper Tap Monitoring Revocation

A system must return to six-month monitoring periods at the original number of sampling sites if:

1. A large water system fails to operate within the range of performance requirements for the WQPs; or
2. A small or medium water system exceeds either the lead or copper action level.

WATER QUALITY PARAMETER MONITORING

All large water systems that maintain the range of values for WQP performance requirements reflecting OCCT during each of two consecutive six-month monitoring periods may collect distribution samples from the **reduced number of sites** during subsequent six-month monitoring periods as follows:

REDUCED MONITORING FOR WATER QUALITY PARAMETERS	
<i>System Size</i>	<i>No. of Sampling Sites</i>
>100,000	10
50,001 to 100,000	7

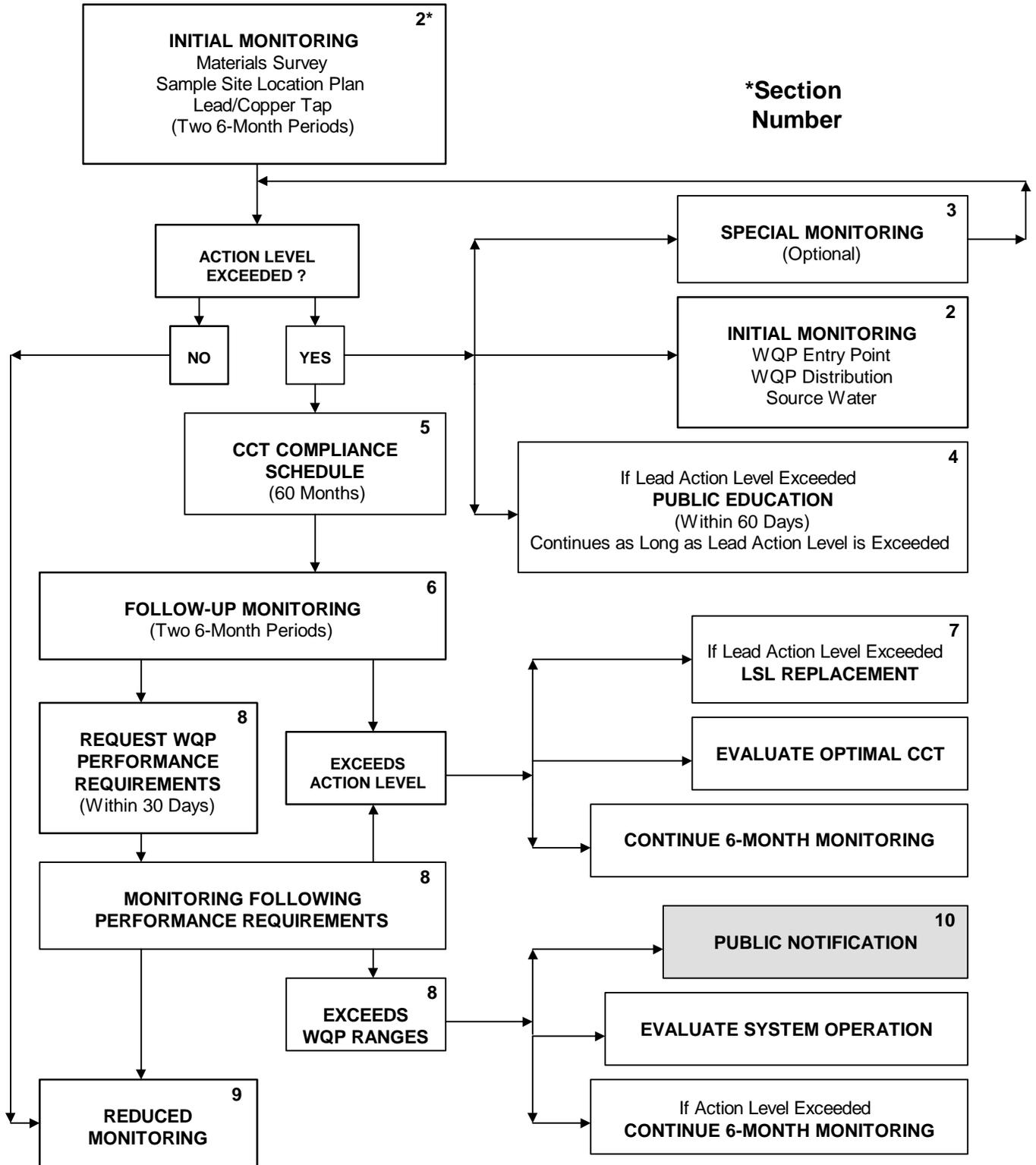
All large water systems that maintain the range of values for WQP performance requirements reflecting OCCT during three consecutive years of monitoring at the reduced number of sites may reduce the frequency with which it collects sets of **WQP distribution samples** from every six months to **annually**. A system conducting annual sampling shall collect these sets of samples evenly throughout the year to reflect seasonal variability.

WQP monitoring at the entry points is not eligible for reduced monitoring.

Reduced Water Quality Parameter Monitoring Revocation

A large water system must return to six-month monitoring periods at the original number of sampling sites if a large water system fails to operate within the range of performance requirements for the WQPs.

SECTION 10



NOTE: Small and medium systems can qualify for reduced monitoring at any time by not exceeding the lead and copper action levels during two consecutive six-month monitoring periods.

PUBLIC NOTIFICATION

A water system shall give public notification when one of the following occurs:

1. The water system fails to perform monitoring and analyses as required by the Lead and Copper Rule; or
2. The water system is not in compliance with WQP performance requirements or source water treatment performance requirements.

Public notification shall be given in accordance with section 109.401, 25 Pa. Code Chapter 109, and shall otherwise comply with Subchapter D.

SYSTEM MANAGEMENT RESPONSIBILITIES

REPORTING AND RECORDKEEPING

Sample Site Location Plan

The system shall prepare a sample site location plan, maintain the plan on record and present or submit the plan upon request to DEP. The system shall update the following information in the plan within the first 10 days following the end of each applicable monitoring period:

- Selection of different lead and copper tap sample sites sampled during previous monitoring periods and corresponding site selection justification;
- Changes in water quality parameter (WQP) distribution or entry point site selection or source water entry point site selection from sites sampled during previous monitoring periods; and
- An update of the sample procedure certification.

Reporting of Monitoring Results

The water system shall assure that the lead and copper tap monitoring results are reported to DEP within the first 10 days following the end of the month in which required results are received, or the first 10 days following the end of the required monitoring period, whichever is shorter.

The water system shall retain the WQP monitoring results and present or submit the results to DEP upon request.

The water system shall retain the source water monitoring results and present or submit the results to DEP upon request.

CCT Reporting Requirements

A water system demonstrating OCCT shall submit information sufficient for DEP to evaluate and determine whether optimal treatment has been achieved.

A large water system shall complete a CCT feasibility study and submit the study to DEP by June 30, 1994.

A small or medium water system required to complete a CCT feasibility study shall submit the study to DEP within 18 months of exceeding an action level.

Upon completion of construction or modification of CCT the water system shall submit to DEP a certification of construction.

Upon completion of follow-up monitoring, the water system shall submit to DEP a request for designation of OCCT performance requirements.

PE Reporting Requirements

(See PE Section 4)

LSL Replacement Reporting Requirements

(See LSL Section 7)

OPERATION AND MAINTENANCE (O&M) PLAN

A community water system which completes construction or modification of CCT facilities shall include in its O&M plan information concerning the new or modified CCT.

A nontransient noncommunity water system which completes construction or modification of CCT facilities shall develop an O&M plan for the facilities.

The O&M plan for CCT facilities shall contain at least the following information:

- A description of the facilities;
- An explanation of startup and normal operation procedures;
- A routine maintenance program;
- A records and reporting system;
- Sampling and analysis program;
- Staffing and training;
- A safety program;
- An emergency plan and operating procedures; and

- Manufacturers' manuals.

OPERATOR CERTIFICATION AND TRAINING

Community water systems and nontransient noncommunity water systems which are required to construct or modify CCT facilities shall comply with the following:

1. Prior to initiation of operation of the CCT facilities, have personnel who have successfully completed DEP-sponsored training relating to CCT for lead and copper. DEP will expressly designate which training courses meet the requirements.
2. Within three years of initiation of operation of the CCT facilities, have personnel certified under the Sewage Treatment Plant and Waterworks Operators' Certification Act. The minimum certification to operate CCT facilities shall be a certificate to operate plants not utilizing filtration, but with chemical treatment.

LSL REPLACEMENT

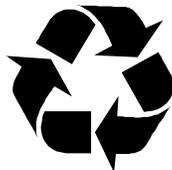
(See LSL Section 7)



Commonwealth of Pennsylvania

Department of Environmental Protection

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