



Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act



EPA Office of Compliance

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Notice

The statements in this document are intended solely as guidance to aid regulated entities in complying with the regulations. The guidance is not a substitute for reading the regulations and understanding all the requirements as it applies to your facility. This guidance does not constitute rulemaking by the U.S. EPA and may not be relied on to create a substantive or procedural right or benefit enforceable, at law or in equity, by any person. U.S. EPA may decide to update this guide without public notice to reflect changes in U.S. EPA's approach to implementing the regulations or to clarify and update text. To determine whether U.S. EPA has revised this document and/or to obtain copies, contact U.S. EPA's Center for Environmental Publications at 1(800) 490-9198. Additional information regarding U.S. EPA Hotlines and further assistance pertaining to the specific rules discussed in this document can be found at the end of the *Key Compliance Requirements* located in Section II. **The contents of this document reflect regulations issued as of March 1, 2000.**

Acknowledgments

U.S. EPA would like to gratefully acknowledge the support of the U.S. Army Corps of Engineers Construction Engineering Research Laboratory (CERL) for providing suggestions for overall format of this document. The Office of Compliance Staff gratefully acknowledges the contributions of U.S. EPA's Program Offices and the Office of General Counsel in reviewing and providing comments on this document.

Table of Contents

Notice.....inside cover
Acknowledgement.....inside cover

Section 1: Introduction
Backgroundii
Who Should Use These Protocols?ii
U.S. EPA’s Public Policies that Support Environmental Auditingiii
How To Use the Protocolsiv
The Relationship of Auditing to Environmental Management Systemsvi

Section II: Audit Protocol
Applicability..... 1
Review of Federal Legislation1
State and Local Regulations1
Key Compliance Requirements2
Key Terms and Definitions4
Typical Records to Review 11
Typical Physical Features to Inspect 11
Checklist User Guidance 11
List of Acronyms and Abbreviations..... 13
Index for Checklist Users 15
Checklist 17

Appendices
Appendix A: Primary Drinking Water Standards for Organic Contaminants..... A1
Appendix B: Primary Drinking Water Standards for Inorganic Contaminants B1
Appendix C: Detection Limitations for Inorganic Contaminants C1
Appendix D: Detection Limitations D1
Appendix E: Unregulated Contaminant Monitoring Regulation (1999) E1
Appendix F: Unregulated Contaminant Monitoring Reporting Requirements F1
Appendix G: Coliform Bacteria Sampling Frequency G1
Appendix H: Consumer Confidence Report Contents..... H1
Appendix I: Monitoring and Sampling Parameters for Lead and Copper in Drinking Water I1
Appendix J: Monitoring Requirements for Water Quality Parameters..... J1
Appendix K: Maximum Contaminant Level and Maximum Residual Disinfectant Level Requirements Related to Disinfection K1
Appendix L: Monitoring Frequency for Total Trihalomethanes and Haloacetic Acids (Five)..... L1
Appendix M: Reporting Requirements M1
Appendix N: User Satisfaction Questionnaire and Comment Form..... N

Section I Introduction

Background

The Environmental Protection Agency (U.S. EPA) is responsible for ensuring that businesses and organizations comply with federal laws that protect the public health and the environment. U.S. EPA's Office of Enforcement and Compliance Assurance (OECA) has begun combining traditional enforcement activities with more innovative compliance approaches including the provision of compliance assistance to the general public. U.S. EPA's Office of Compliance Assistance was established in 1994 to focus on compliance assistance-related activities. U.S. EPA is also encouraging the development of self-assessment programs at individual facilities. Voluntary audit programs play an important role in helping companies meet their obligation to comply with environmental requirements. Such assessments can be a critical link, not only to improved compliance, but also to improvements in other aspects of an organization's performance. For example, environmental audits may identify pollution prevention opportunities that can substantially reduce an organization's operating costs. Environmental audits can also serve as an important diagnostic tool in evaluating a facility's overall environmental management system or EMS.

U.S. EPA is developing 13 multi-media Environmental Audit Protocols to assist and encourage businesses and organizations to perform environmental audits and disclose violations in accordance with OECA's Audit and Small Business Policies. The audit protocols are also intended to promote consistency among regulated entities when conducting environmental audits and to ensure that audits are conducted in a thorough and comprehensive manner. The protocols provide detailed regulatory checklists that can be customized to meet specific needs under the following primary environmental management areas:

- Generation of RCRA Hazardous Waste
- CERCLA
- Safe Drinking Water Act
- Managing Nonhazardous Solid Waste
- Treatment Storage and Disposal of RCRA Hazardous Waste
- Clean Air Act
- TSCA
- Pesticides Management (FIFRA)
- RCRA Regulated Storage Tanks
- EPCRA
- Clean Water Act
- Universal Waste and Used Oil
- Management of Toxic Substances (e.g., PCBs, lead-based paint, and asbestos)

Who Should Use These Protocols?

U.S. EPA has developed these audit protocols to provide regulated entities with specific guidance in periodically evaluating their compliance with federal environmental requirements. The specific application of this particular protocol, in terms of which media or functional area it applies to, is described in Section II under "Applicability".

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

The Audit Protocols are designed for use by individuals who are already familiar with the federal regulations but require an updated comprehensive regulatory checklist to conduct environmental *compliance* audits at regulated facilities. Typically, compliance audits are performed by persons who are not necessarily media or legal experts but instead possess a working knowledge of the regulations and a familiarity with the operations and practices of the facility to be audited. These two basic skills are a prerequisite for adequately identifying areas at the facility subject to environmental regulations and potential regulatory violations that subtract from the organizations environmental performance. With these basic skills, audits can be successfully conducted by persons with various educational backgrounds (e.g., engineers, scientists, lawyers, business owners or operators). These protocols are not intended to be a substitute for the regulations nor are they intended to be instructional to an audience seeking a primer on the requirements under Title 40, however, they are designed to be sufficiently detailed to support the auditor's efforts.

The term "Protocol" has evolved over the years as a term of art among the professional practices of auditing and refers to the actual working document used by auditors to evaluate facility conditions against a given set of criteria (in this case the federal regulations). Therefore these documents describe "what" to audit a facility for rather than "how" to conduct an audit. To optimize the effective use of these documents, you should become familiar with basic environmental auditing practices. For more guidance on how to conduct environmental audits, U.S. EPA refers interested parties to two well known organizations: The Environmental Auditing Roundtable (EAR) and the Institute for Environmental Auditing (IEA).

Environmental Health and Safety Auditing Roundtable
35888 Mildred Avenue
North Ridgeville, Ohio 44039
(216) 327-6605

The Institute for Environmental Auditing
Box 23686
L'Enfant Plaza Station
Washington, DC 20026-3686

U.S. EPA's Public Policies that Support Environmental Auditing

In 1986, in an effort to encourage the use of environmental auditing, U.S. EPA published its "Environmental Auditing Policy Statement" (see 51 FR 25004). The 1986 audit policy states that "it is U.S. EPA policy to encourage the use of environmental auditing by regulated industries to help achieve and maintain compliance with environmental laws and regulation, as well as to help identify and correct unregulated environmental hazards." In addition, U.S. EPA defined environmental auditing as "a systematic, documented, periodic, and objective review of facility operations and practices related to meeting environmental requirements." The policy also identified several objectives for environmental audits:

- verifying compliance with environmental requirements,
- evaluating the effectiveness of in-place environmental management systems, and
- assessing risks from regulated and unregulated materials and practices.

In 1995, U.S. EPA published "Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations" which both reaffirmed and expanded its 1986 audit policy. The 1995 audit policy offers major incentives for entities to discover, disclose and correct environmental violations. Under the 1995 policy, U.S. EPA will not seek gravity-based penalties or recommend criminal charges be brought for violations that are discovered through an "environmental audit" (as defined in the 1986 audit policy) or a management system reflecting "due diligence" and that are promptly disclosed and corrected, provided that other important safeguards are met. These safeguards protect health and the environment by precluding policy relief for violations that cause serious environmental harm or may have presented an imminent and substantial endangerment.

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

In 1996, U.S. EPA issued its “Final Policy on Compliance Incentives for Small Businesses”. The policy is intended to promote environmental compliance among small businesses by providing them with special incentives to participate in U.S. EPA compliance assistance programs. Similar to the U.S. EPA Audit Policies, the Small Business Policy also encourages small businesses to conduct environmental audits, and then to promptly disclose and correct violations.

More information on U.S. EPA’s Small Business and Audit/Self-Disclosure Policies are available by contacting U.S. EPA’s Enforcement and Compliance Docket and Information Center at (202) 564-2614 or visiting the U.S. EPA web site at: http://es.EPA.gov/oeca/polguid/polguid_1.html

How to Use The Protocols

Each protocol provides guidance on key requirements, defines regulatory terms, and gives an overview of the federal laws affecting a particular environmental management area. They also include a checklist containing detailed procedures for conducting a review of facility conditions. The audit protocols are designed to support a wide range of environmental auditing needs; therefore several of the protocols in this set or sections of an individual protocol may not be applicable to a particular facility. To provide greater flexibility, each audit protocol can be obtained electronically from the U.S. EPA Website (www.EPA.gov/oeca/ccsmd/profile.html). The U.S. EPA Website offers the protocols in a word processing format which allows the user to custom-tailor the checklists to more specific environmental aspects associated with the facility to be audited.

The protocols are not intended to be an exhaustive set of procedures; rather they are meant to inform the auditor, about the degree and quality of evaluation essential to a thorough environmental audit. U.S. EPA is aware that other audit approaches may also provide an effective means of identifying and assessing facility environmental status and in developing corrective actions.

It is important to understand that there can be significant overlap within the realm of the federal regulations. For example, the Department of Transportation (DOT) has established regulations governing the transportation of hazardous materials. Similarly, the Occupational Safety and Health Administration (OSHA) under the U.S. Department of Labor has promulgated regulations governing the protection of workers who are exposed to hazardous chemicals. There can also be significant overlap between federal and state environmental regulations. In fact, state programs that implement federally mandated programs may contain more stringent requirements that are not included in these protocols. There can also be multiple state agencies regulating the areas covered in these protocols. The auditor also should determine which regulatory agency has authority for implementing an environmental program so that the proper set of regulations is consulted. Prior to conducting the audit, the auditor should review federal, state and local environmental requirements and expand the protocol, as required, to include other applicable requirements not included in these documents.

Review of Federal Legislation and Key Compliance Requirements:

These sections are intended to provide only supplementary information or a “thumbnail sketch” of the regulations and statutes. These sections are not intended to function as the main tool of the protocol (this is the purpose of the checklist). Instead, they serve to remind the auditor of the general thrust of the regulation and to scope out facility requirements covered by that particular regulation. For example, a brief paragraph describing record keeping and reporting requirements and the associated subpart citations will identify and remind the auditor of a specific area of focus at the facility. This allows the auditor to plan the audit properly and to identify key areas and documents requiring review and analysis.

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

State and Local Regulations:

Each U.S. EPA Audit Protocol contains a section alerting the auditor to typical issues addressed in state and local regulations concerning a given topic area (e.g., RCRA and used oil). From a practical standpoint, U.S. EPA cannot present individual state and local requirements in the protocols. However, this section does provide general guidance to the auditor regarding the division of statutory authority between U.S. EPA and the states over a specific media. This section also describes circumstances where states and local governments may enact more stringent requirements that go beyond the federal requirements.

U.S. EPA cannot overemphasize how important it is for the auditor to take under consideration the impact of state and local regulations on facility compliance. U.S. EPA has delegated various levels of authority to a majority of the states for most of the federal regulatory programs including enforcement. For example, most facilities regulated under RCRA, and/or CWA have been issued permits written by the states to ensure compliance with federal and state regulations. In turn, many states may have delegated various levels of authority to local jurisdictions. Similarly, local governments (e.g., counties, townships) may issue permits for air emissions from the facility. Therefore, auditors are advised to review local and state regulations in addition to the federal regulations in order to perform a comprehensive audit.

Key Terms and Definitions:

This section of the protocol identifies terms of art used in the regulations and the checklists that are listed in the “Definitions” sections of the Code of Federal Regulations (CFR). It is important to note that not all definitions from the CFR may be contained in this section, however; those definitions which are commonly repeated in the checklists or are otherwise critical to an audit process are included. Wherever possible, we have attempted to list these definitions as they are written in the CFR and not to interpret their meaning outside of the regulations.

The Checklists:

The checklists delineate what should be evaluated during an audit. The left column states either a requirement mandated by regulation or a good management practice that exceeds the requirements of the federal regulations. The right column gives instructions to help conduct the evaluation. These instructions are performance objectives that should be accomplished by the auditor. Some of the performance objectives may be simple documentation checks that take only a few minutes; others may require a time-intensive physical inspection of a facility. The checklists contained in these protocols are (and must be) sufficiently detailed to identify any area of the company or organization that would potentially receive a notice of violation if compliance is not achieved. For this reason, the checklists often get to a level of detail such that a specific paragraph of the subpart (e.g., 40 CFR 262.34(a)(1)(i)) contained in the CFR is identified for verification by the auditor. The checklists contain the following components:

- **“Regulatory Requirement or Management Practice Column”**
The “Regulatory Requirement or Management Practice Column” states either a requirement mandated by regulation or a good management practice that exceeds the requirements of the Federal regulations. The regulatory citation is given in parentheses after the stated requirement. Good management practices are distinguished from regulatory requirements in the checklist by the acronym (MP) and are printed in italics.
- **“Reviewer Checks” Column:**
The items under the “Reviewer Checks:” column identify requirements that must be verified to accomplish the auditor’s performance objectives. (*The key to successful compliance auditing is to verify and document site observations and other data.*) The checklists follow very closely with the text in the CFR in order to provide the service they are intended to fulfill (i.e., *to be used for compliance auditing*). However, they are not a direct recitation of the CFR. Instead they are organized into more of a functional arrangement (e.g., recordkeeping and reporting requirements vs. technical controls) to accommodate an auditor’s likely sequence of review during the site visit. Wherever possible, the statements or items under the “Reviewer

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Checks” column, will follow the same sequence or order of the citations listed at the end of the statement in the “Regulatory Requirement” column.

- **“NOTE:” Statements**

“Note:” statements contained in the checklists serve several purposes. They usually are distinguished from “Verify” statements to alert the auditor to *exceptions or conditions* that may affect requirements or to referenced standards that are not part of Title 40 (e.g., American Society for Testing and Materials (ASTM) standards). They also may be used to identify options that the regulatory agency may choose in interacting with the facility (e.g., permit reviews) or options the facility may employ to comply with a given requirement.

- **Checklist Numbering System:**

The checklists also have a unique numbering system that allows the protocols to be more easily updated by topic area (e.g., RCRA Small Quantity Generator). Each topic area in turn is divided into control breaks to allow the protocol to be divided and assigned to different teams during the audit. This is why blank pages may appear in the middle of the checklists. Because of these control breaks, there is intentional repetition of text (particularly “Note” Statements) under the “Reviewer Checks” column to prevent oversight of key items by the audit team members who may be using only a portion of the checklist for their assigned area.

Updates:

Environmental regulations are continually changing both at the federal and state level. For this reason, it is important for environmental auditors to determine if any new regulations have been issued since the publication of each protocol document and, if so, amend the checklists to reflect the new regulations. Auditors may become aware of new federal regulations through periodic review of Federal Register notices as well as public information bulletins from trade associations and other compliance assistance providers. In addition, U.S. EPA offers information on new regulations, policies and compliance incentives through several Agency Websites. Each protocol provides specific information regarding U.S. EPA program office websites and hotlines that can be accessed for regulatory and policy updates.

U.S. EPA will periodically update these audit protocols to ensure their accuracy and quality. Future updates of the protocols will reflect not only the changes in federal regulations but also public opinion regarding the usefulness of these documents. Accordingly, the Agency would like to obtain feedback from the public regarding the format, style and general approach used for the audit protocols. The last appendix in each protocol document contains a user satisfaction survey and comment form. This form is to be used by U.S. EPA to measure the success of this tool and future needs for regulatory checklists and auditing materials.

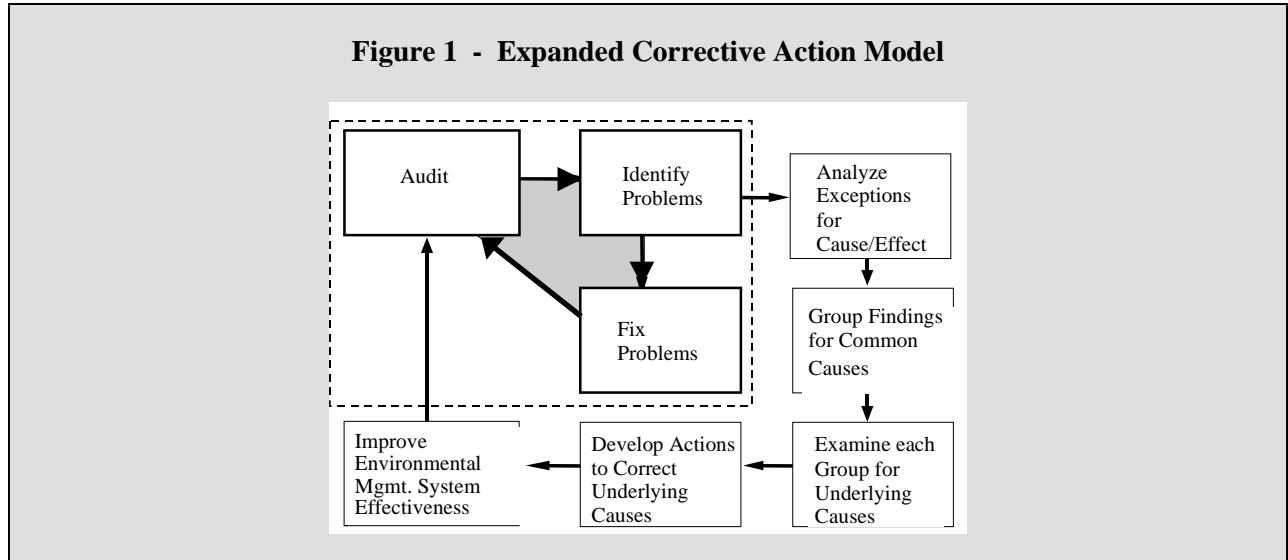
The Relationship of Auditing to Environmental Management Systems

An environmental auditing program is an integral part of any organization’s environmental management system (EMS). Audit findings generated from the use of these protocols can be used as a basis to implement, upgrade, or benchmark environmental management systems. Regular environmental auditing can be the key element to a high quality environmental management program and will function best when an organization identifies the “root causes” of each audit finding. Root causes are the primary factors that lead to noncompliance events. For example a violation of a facility’s wastewater discharge permit may be traced back to breakdowns in management oversight, information exchange, or inadequate evaluations by untrained facility personnel.

As shown in Figure 1, a typical approach to auditing involves three basic steps: conducting the audit, identifying problems (audit findings), and fixing identified deficiencies. When the audit process is expanded, to identify and correct root causes to noncompliance, the organization’s corrective action part of its EMS becomes more effective. In the expanded model, audit findings (exceptions) undergo a root cause analysis to identify underlying causes to noncompliance events. Management actions are then taken to correct the underlying causes behind the audit findings and improvements are made to the organizations overall EMS before another audit is conducted on the facility. Expanding the audit process allows the organization to successfully correct problems, sustain compliance, and

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

prevent discovery of the same findings again during subsequent audits. Furthermore, identifying the root cause of an audit finding can mean identifying not only the failures that require correction but also successful practices that promote compliance and prevent violations. In each case a root cause analysis should uncover the failures while promoting the successes so that an organization can make continual progress toward environmental excellence.



This Page Intentionally Left Blank

Section II Audit Protocols

Applicability

This audit protocol applies to regulated entities responsible for operating and maintaining public drinking water systems and providing drinking water to communities and the public. Each of these activities are regulated under the Safe Drinking Water Act (SDWA). The SDWA applies to all Public Water Systems (PWS), whether the PWS is under jurisdiction of a state, territory or commonwealth (collectively referred to as (“States”), located on an Indian reservation, or located in a state that defers to EPA’s exercise of primary enforcement jurisdiction.

Not all checklist items contained in this document will be applicable to a particular facility. Guidance is provided on the checklists to direct the auditor to the regulations typically applicable to the types of activities identified above. In addition to the federal regulations, there are numerous environmental regulatory requirements administered by state and local governments. Each level of government may have a major impact on areas at the facility that are subject to the audit. Therefore auditors are advised to review federal, state, and local regulations in order to perform a comprehensive audit.

Review of Federal Legislation

The Safe Drinking Water Act (SDWA)

This act, codified at 42 U.S. Code (USC) 300f-300j-25, requires U.S. EPA to establish national primary drinking water regulations to ensure the safety of drinking water in the United States. These regulations set national limits on contaminant levels in drinking water to ensure that the water is safe for human consumption. These limits, known as maximum contaminant levels (MCLs), set the maximum permissible level of a contaminant in water delivered to a user of a public water supply system. At the federal level, U.S. EPA has set drinking water standards, or MCLs, for more than 80 contaminants. In addition to primary and secondary drinking water standards, the regulations promulgated under the SDWA also establish a federal-state system to ensure compliance with these standards.

The Safe Drinking Water Act Amendments of 1996 made fundamental changes in the nature of the drinking water program at the federal, state and local levels. In accordance with these 1996 amendments, U.S. EPA began work on revising several rules. In 1998, U.S. EPA promulgated several major rule changes. One rule change resulted in the revision of the regulations regarding the issuance and availability of variances and exemptions (V&E) under the SDWA. Another rule change revised the public water system notification requirements under Section 1414(c) of the SDWA. The 1996 amendments also required U.S. EPA to issue several new rules to control microbial contaminants and the byproducts of the chemicals used to control them. More specific information on these rule changes is provided below under “Key Compliance Requirements” and the Checklist of this document.

State/Local Regulations

The SDWA intends U.S. EPA, states and federally-recognized Indian tribes to work as partners to ensure delivery of safe drinking water to the public. Any state or tribe can request responsibility for operation and oversight of the drinking water program within its borders. In order to receive this responsibility (also called primary enforcement authority or primacy), a state or tribe must adopt regulations that are at least as stringent as federal regulations, demonstrate its capacity to enforce those regulations, and implement other activities necessary to ensure compliance. In the absence of state or tribal primacy, U.S. EPA assumes responsibility for administering the drinking water program including enforcement responsibilities for that area. Of the 56 eligible states (defined to include Commonwealths, Territories, and the District of Columbia), all but Wyoming and the District of Columbia have primacy. U.S. EPA Regional Offices administer the drinking water program within these two jurisdictions and on all tribal lands.

States that have primacy may establish drinking water regulations, monitoring schedules and reporting requirements at least as stringent, or in addition to, those in the federal regulations. Public water systems in these states are

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

required to comply with these additional requirements. Generally speaking, most states who have primacy adopt drinking water regulations which closely reflect the federal requirements. Some states also require the certification of operators of public water systems. Furthermore, some states require operators to receive approval of plans and specifications prior to constructing or modifying a public water system. In addition, all states will need to adopt/implement a certification program by February 2001 to avoid withholding of federal "state revolving fund" (SRF) monies.

Key Compliance Requirements

Recordkeeping Requirements

Any owner or operator of a public water system must retain, on the premises or at a nearby and convenient location, certain records pertaining to system performance. These records include analytical results for bacteriological and chemical analysis, actions taken by the system to correct violations of primary drinking water standards, copies of any written reports, summaries of communications relating to sanitary surveys and records concerning a variance or exemption granted to the system. Each of these different records must be kept for different time periods ranging from 3 to 10 yr. These requirements are found under 40 CFR 141.33.

Drinking Water Standards

U.S. EPA has developed primary and secondary drinking water standards which are contaminant-specific concentration limits that apply to certain types of public water supplies. Primary drinking water standards consist of maximum contaminant level goals (MCLG), which are non-enforceable health-based goals, and maximum contaminant levels (MCLs) which are enforceable limits set as close to MCLGs as possible, considering cost and feasibility of attainment. Drinking water must either meet MCL standards or be treated to meet these standards (see the individual checklist items and appendices in this document for details on the standards). The secondary drinking water regulations cover contaminants that affect the aesthetic quality of drinking water and are intended as guidelines that are not enforceable by U.S. EPA but may be enforced by a state that chooses to enforce some or all of the secondary drinking water regulations. States with primacy, or U.S. EPA where it administers the program, may grant a public water system a variance and exemption from national primary drinking water standards, *provided* that the terms of the variance and exemption adequately protect public health. U.S. EPA regulations pertaining to drinking water standards are found under 40 CFR 141 (40 CFR 141.11(a), 141.11(b), 141.11(d), 141.12, 141.15, 141.16(a), 141.60 through 141.63, and 141.80(c)).

Monitoring

The monitoring schedule and the type of constituents required to be monitored is based on the type of water supply system, the size of the service population, and the source of the water supply. For example, community water systems and nontransient noncommunity water systems are required to monitor for organic and inorganic contaminants. However, all public water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels and total coliforms. Monitoring requirements for public water systems are contained in 40 CFR 141.21, 141.24, 141.26 and 141.30. All analysis of samples used to determine compliance with MCLs must be performed in a state-approved laboratory or by a state-approved individual (40 CFR 141.28, 141.30, 141.41, and 141.42)

Total Coliform Sampling

The Total Coliform Rule promulgated by U.S. EPA requires all public water systems to monitor for total coliforms. Their presence in water can indicate a lapse in treatment and potential contamination by pathogens. Total coliform samples are required to be collected at regular intervals throughout the month. The number of samples required is based on the size of the system. When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive results. In addition, positive results for total coliform must be followed by tests for other microbial pathogens, such as *E. Coli*, that can endanger human health (40 CFR 141.21).

Filtration and Disinfection

All public water systems that get their water from a surface water source or a ground water source that comes into contact with a surface water source must disinfect and filter that water. Compliance with U.S. EPA's Surface Water

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Treatment Rule (SWTR) indicates that a public water system has taken steps to reduce exposure to microbiological contamination filtration and disinfection, and watershed control. Treatment technique requirements have been established under the SWTR to protect people against viruses and other microbial pathogens that are a threat to human health.

The 1996 amendments to the SDWA required U.S. EPA to issue several new rules to control microbial contaminants and the byproducts of the chemicals used to control them. On December 3, 1998, EPA issued the first set of the Interim Enhanced Surface Water Treatment Rule (IESWTR) and the Stage 1 Disinfectants/Disinfection Byproduct Rule. Public water systems regulated under 40 CFR 141 Subpart H serving at least 10,000 people must meet the requirements of the IESWTR by January 1, 2002. Community and nontransient noncommunity water systems that perform disinfection are required to meet specific MCLs and MRDLs, and monitor for disinfection byproducts, disinfection byproduct precursors, and disinfection residuals (40 CFR 141.70 through 141.75, 40 CFR 141.30, 141.64 through 141.65, 141.130 through 141.135).

Notification and Reporting Requirements

Public water systems are required to report all monitoring results to the primary enforcement authority. States with primacy, or U.S. EPA where it administers the program, analyze the monitoring results determine compliance and report violations to U.S. EPA on a quarterly basis. A public water systems is required under Section 1414(c) of the SDWA to provide notification to its customers whenever: 1) a violation of certain drinking water regulations occurs (including MCLs, treatment technique, and monitoring/reporting requirements); 2) a variance and exception (V&E) is in place or the conditions of the V&E are violated, or; 3) results from unregulated contaminant monitoring required under Section 1445 of the SDWA are received.

The 1996 amendments to the SDWA do not change the basic requirement for public water systems with violations of drinking water standards to give public notification, however the amendments: 1) alter the timing of the notification for certain violations; 2) establish a specific requirement for U.S. EPA consultation with the states in issuing revised regulations; 3) allow the state to prescribe alternative notification requirements by rule with respect to the form and content of the notice, and; 4) add a new requirement for the state to prepare an annual report on violations and for U.S. EPA to prepare a follow-on report summarizing states' reports and public notices submitted by public water systems serving Indian Tribes. In addition to requiring state and national compliance reports, the 1996 amendments include a requirement for public water systems to prepare an annual consumer confidence report that contains information on the source of the water supply, the levels of detected contaminants found in the drinking water, information on the health effects of contaminants found in drinking water, information on the health effects found in violation of national standards, and information on unregulated contaminants (40 CFR 141.31 through 141.32).

Lead and Copper in Drinking Water

All community and nontransient noncommunity water systems must monitor and control the amount of lead and copper delivered to the tap, usually by maintaining a water pH level that will not leach these metals from pipes. These water systems must meet action levels for 1.3 mg/L for copper and 0.015 mg/L for lead. When a system exceeds the action level for lead, it must distribute public education materials. Large systems and those small and medium-size systems exceeding the action levels must begin corrosion control treatment unless, under certain circumstances, the system is deemed to have optimized corrosion control. Systems that continue to exceed the action levels for lead, after installing corrosion control, must replace lead service lines. The water system regulated under these requirements is also required to fulfill specific reporting requirements and retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80 through 141.91).

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

For further information regarding the SDWA regulations, contact U.S. EPA's Safe Drinking Water Hotline at 1-800-426-4791 from 9:00 a.m. to 5:30 p.m. (EST), Monday through Friday. In addition, drinking water information is available to the public via the EPA website <http://www.epa.gov/safewater>. In addition, EPA's Office of Ground Water and Drinking Water offers another EPA website <http://www.epa.gov/OGWDW> for providing public information on drinking water regulations and appropriate Federal Register and Code of Federal Register citations.

This SDWA Hotline, operating under contract to U.S. EPA is staffed by professionals trained to help the public, drinking water stakeholders, and state and local officials understand the regulations and programs developed in response to the Safe Drinking Water Act (as amended in 1986 and 1996). This includes information about U.S. EPA's drinking water regulations, source water protection programs, guidance, and public education materials.

Key Terms and Definitions

Action Level

The concentration of lead or copper in the water specified in 40 CFR 141.80(c) which determines, in some cases, the treatment requirements that a water system is required to complete (40 CFR 141.2).

Best Available Technology (BAT)

The best technology, treatment techniques, or other means which the U.S. EPA administrator finds, after it was examined for efficacy under field conditions and not solely under lab conditions that are available (taking cost into consideration). For the purposes of setting MCLs for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon (40 CFR 141.2).

Coagulation

A process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs (40 CFR 141.2).

Community Water System

A public water system that serves at least 15 service connections used by year round residents or regularly serves at least 25 yr-round residents (40 CFR 141.2).

Compliance Cycle

The nine-year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar year cycle begins January 1, 1993 and ends December 31, 2001; the second begins January 1, 2002 and ends December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019 (40 CFR 141.2).

Compliance Period

A 3-yr calendar year period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period runs from January 1, 1993 to December 31, 1995; the second from January 1, 1996 to December 31, 1998; the third from January 1, 1999 to December 31, 2001 (40 CFR 141.2).

Comprehensive Performance Evaluation (CPE)

A thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation, and maintenance practices. It is conducted to identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with Subpart P of 40 CFR 141, the comprehensive performance evaluation must consist of at least the following components: Assessment of plant performance; evaluation of major

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report (40 CFR 141.2).

Confluent Growth

A continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete (40 CFR 141.2).

Contaminant

Any physical, chemical, biological, or radiological substance or matter in water (40 CFR 141.2).

Conventional Filtration Treatment

A series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal (40 CFR 141.2).

Corrosion Inhibitor

A substance capable of reducing the corrosivity of water toward metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials (40 CFR 141.2)

Diatomaceous Earth Filtration

A process resulting in substantial particulate removal in which (40 CFR 141.2):

1. a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum)
2. while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

Direct Filtration

A series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal (40 CFR 141.2).

Disinfectant

Any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, and ozone added to water in any part of the treatment or distribution process that is intended to kill or inactivate pathogenic micro-organisms (40 CFR 141.2).

Disinfection

A process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents (40 CFR 141.2).

Disinfection Profile

A summary of daily *Giardia lamblia* inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in 40 CFR 141.172 (40 CFR 141.2).

Domestic or Other Nondistribution System Plumbing Problem

A coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken (40 CFR 141.2).

Dose Equivalent

The product of the absorbed dose from ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements (ICRU) (40 CFR 141.2).

Effective Corrosion Inhibitor Residual

For the purpose of Subpart I of 40 CFR 141, means a concentration sufficient to form a passivating film on the interior walls of a pipe (40 CFR 141.2).

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Enhanced Coagulation

The addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment (40 CFR 141.2).

Enhanced Softening

The improved removal of disinfection byproduct precursors by precipitative softening (40 CFR 141.2).

Exempted Public Water Systems

A public water system that meets all of the following conditions is not required to meet the standards outlined in 40 CFR 141 (40 CFR 141.3):

1. consists only of distribution and storage facilities and do not have any collection and treatment facilities
2. obtains all of its water from, but is not owned by or operated by, a public water system to which 40 CFR 141 applies
3. does not sell water to any person
4. is not a carrier that conveys passengers in interstate commerce.

Filter Profile

A graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed (40 CFR 141.2).

Filtration

A process for removing particulate matter from water by passage through porous media (40 CFR 141.2).

First Draw Sample

A one-liter sample of tap water, collected in accordance with 40 CFR 141.86(b)(2), that has been standing in plumbing pipes at least 6 h and is collected without flushing the tap (40 CFR 141.2).

Flocculation

A process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means (40 CFR 141.2).

GAC10

Granular activated carbon filter beds with an empty-bed contact time of 10 min based on average daily flow and a carbon reactivation frequency of every 180 days (40 CFR 141.2)

Gross Alpha Particle Activity

The total radioactivity due to alpha particle emissions as inferred from measurements on a dry sample (40 CFR 141.2).

Gross Beta Particle Activity

The total radioactivity due to beta particle emission as inferred from measurements on a dry sample (40 CFR 141.2).

Groundwater Under the Direct Influence of Surface Water

Any water beneath the surface of the ground with significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or (for Subpart H systems serving at least 10,000 people only) *Cryptosporidium*, or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Direct influence must be determined for individual sources in accordance with criteria established by the state. The state determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation (40 CFR 141.2)

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Haloacetic Acids (Five) (HAA5)

The sum of the concentrations in milligrams per liter of the haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition (40 CFR 141.2).

Halogen

One of the chemical elements chlorine, bromine, or iodine (40 CFR 141.2).

Initial Compliance Period

The first full 3-yr compliance period which begins at least 18 mo after promulgation, except for dichloromethane, 1,2,4-trichlorobenzene, 1,1,2-trichloroethane, benzo(a)pyrene, dalapon, Di(2-ethylhexyl) adipate, Di(2-ethylhexyl) phthalate, dinoseb, diquat, endrin, endosulfan, glyphosate, hexachlorobenzene, Hexachlorocyclopentadiene, Oxamyl (vydate), picloram, simazine, 2,3,7,8-TCDD (dioxin), antimony, beryllium, cyanide (as free cyanide), nickel, and thallium, the initial compliance period means the first full 3-yr compliance period after promulgation for systems with 150 or more service connections (January 1993 to December 1995), and first full 3 yr compliance period after the effective date of the regulation (January 1996 to December 1998) for systems having fewer than 150 service connections (40 CFR 141.2).

Large Water System

In reference to lead and copper in systems, this refers to a water system that serves more than 50,000 persons (40 CFR 141.2).

Lead Service Line

A service line made of lead which connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting which is connected to such a lead line (40 CFR 141.2).

Legionella

A genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease (40 CFR 141.2).

Man-made Beta Particle and Photon Emitters

All radionuclides emitting beta particles and/or photons listed in Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure, NBS Handbook 69, except the daughter products of thorium-232, uranium-235 and uranium-238 (40 CFR 141.2).

Maximum Contaminant Level (MCL)

The maximum permissible level of a contaminant in water that is delivered to any user of a public water system (40 CFR 141.2).

Maximum Contaminant Level Goal (MCLG)

Refers to the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MCLGs are nonenforceable health goals (40 CFR 141.2).

Maximum Residual Disinfectant Level (MRDL)

A level of a disinfectant added for water treatment that may not be exceeded at the consumer's tap without an unacceptable possibility of adverse health effects. For chlorine and chloramines, a PWS is in compliance with the MRDL when the running annual average of monthly averages of samples taken in the distribution system, computed quarterly, is less than or equal to the MRDL. For chlorine dioxide, a PWS is in compliance with the MRDL when daily samples are taken at the entrance to the distribution system and no two consecutive daily samples exceed the MRDL. MRDLs are enforceable in the same manner as maximum contaminant levels under Section 1412 of the Safe Drinking Water Act. There is convincing evidence that addition of a disinfectant is necessary for control of waterborne microbial contaminants. Notwithstanding the MRDLs listed in 40 CFR 141.65, operators may increase residual disinfectant levels of chlorine or chloramines (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused

This document is intended solely for guidance. No statutory or regulatory requirements are in any way altered by any statement(s) contained herein.

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections (40 CFR 141.2).

Maximum Residual Disinfectant Level Goal (MRDLG)

The maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants (40 CFR 141.2).

Maximum Total Trihalomethane Potential

The maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after 7 days at a temperature of 25 °C or above (40 CFR 141.2).

Medium Size Water System

In reference to lead and copper in systems (40 CFR, Subpart I), this refers to a water system that serves greater than 3300 and less than or equal to 50,000 persons (40 CFR 141.2).

Near the First Service Connection

At one of the 20 percent of all service connections in the entire system that are nearest the water supply treatment facility as measured by water transport time within the distribution system (40 CFR 141.2).

Noncommunity Water System

A public water system that is not a community water system. A noncommunity water system either a transient noncommunity water system (TWS) or a nontransient noncommunity (NTNC) water system (40 CFR 141.2).

Nontransient, Noncommunity Water System

A public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 mo per year (40 CFR 141.2).

Optimal Corrosion Control Treatment

For the purpose of Subpart I of 40 CFR 141, means the corrosion control treatment that minimizes the lead and copper concentrations at users' taps while insuring that the treatment does not cause the water system to violate any national primary drinking water regulations (40 CFR 141.2).

Performance Evaluation Sample

A reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the U.S. EPA. The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis (40 CFR 141.2).

Person

An individual, corporation, company, association, partnership, municipality, or state, federal, or tribal agency (40 CFR 141.2).

PicoCurie (pCi)

Quantity of radioactive material producing 2.22 nuclear transformations/min (40 CFR 141.2).

Point of Disinfectant Application

The point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water runoff (40 CFR 141.2).

Point-of-Entry Treatment Device

A treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building (40 CFR 141.2).

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Point-of-Use Treatment Device

A treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap (40 CFR 141.2).

Public Water System

A system for the provision to the public of water for human consumption through pipes or, after August 5, 1998, other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year. Such term includes: any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system; and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Such term does not include any "special irrigation district." A public water system is either a community water system or a noncommunity water system. (40 CFR 141.2).

Rem

The unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is 1/1000 of a rem (40 CFR 141.2).

Repeat Compliance Period

Any subsequent compliance period after the initial compliance period (40 CFR 141.2).

Residual Disinfectant Concentration

("C" in CT calculations) is the concentration of disinfectant measured in mg/L in a representative sample of water (40 CFR 141.2).

Sanitary Survey

An onsite review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water (40 CFR 141.2).

Sedimentation

A process for removal of solids before filtration by gravity or separation (40 CFR 141.2).

Service Connection

As used in the definition of public water system, does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if (40 CFR 141.2):

1. the water is used exclusively for purposes other than residential uses (consisting of drinking, bathing, and cooking, or other similar uses);
2. the state determines that alternative water to achieve the equivalent level of public health protection provided by the applicable national primary drinking water regulation is provided for residential or similar uses for drinking and cooking; or
3. the state determines that the water provided for residential or similar uses for drinking, cooking, and bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the applicable national primary drinking water regulations.

Service Line Sample

A one liter sample of water collected in accordance with 40 CFR 141.86(b)(3), that has been standing for at least 6 h in a service line (40 CFR 141.2).

Single Family Structure

For the purpose of Subpart I of 40 CFR 141, means a building constructed as a single-family residence that is currently used as either a residence or a place of business (40 CFR 141.2)

Slow Sand Filtration

A process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 m/h) resulting in substantial particulate removal by physical and biological mechanisms (40 CFR 141.2).

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Small Water System

For the purpose of Subpart I of 40 CFR 141, means a water system that serves 3,300 persons or fewer (40 CFR 141.2).

Special Irrigation District

An irrigation district in existence prior to May 18, 1994 that provides primarily agricultural service through a piped water system with only incidental residential or similar use where the system or the residential or similar users of the system comply with the exclusion provisions in section 1401(4)(B)(i)(II) or (III) (40 CFR 141.2).

Standard Sample

The aliquot of finished drinking water that is examined for the presence of coliform bacteria (40 CFR 141.2).

State

The agency of the state or tribal government that has jurisdiction over public water systems. During any period when a state or tribal government does not have primary enforcement responsibility pursuant to Section 1413 of the SDWA (42 USC 300g-2), the term state means the regional administrator of the U.S. EPA (40 CFR 141.2).

Subpart H Systems

Public water systems using surface water or groundwater under the direct influence of surface water as a source that are subject to the requirements of Subpart H of 40 CFR 141 (40 CFR 141.2).

Supplier of Water

Any person who owns or operates a public water system (40 CFR 141.2).

Surface Water

All water that is open to the atmosphere and subject to surface runoff (40 CFR 141.2).

SUVA

Specific Ultraviolet Absorption at 254 nanometers (nm), an indicator of the humic content of water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nm (UV_{254}) (in m^{-1}) by its concentration of dissolved organic carbon (DOC) (in mg/L) (40 CFR 141.2).

System with a Single Service Connection

A system which supplies drinking water to consumers via a single service line (40 CFR 141.2).

Too Numerous to Count

That the total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection (40 CFR 141.2).

Total Organic Carbon (TOC)

Total organic carbon in mg/L measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to two significant figures (40 CFR 141.2).

Total Trihalomethanes (TTHM)

The sum of the concentration in mg/L of the trihalomethane compounds rounded to two significant figures (40 CFR 141.2).

Transient Noncommunity Water System (TWS)

A noncommunity water system that does not regularly serve at least 25 of the same persons over 6 mo per year (40 CFR 141.2).

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Trihalomethane (THM)

One of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure (40 CFR 141.2).

Uncovered Finished Water Storage Facility

A tank, reservoir, or other facility used to store water that will undergo no further treatment except residual disinfection and is open to the atmosphere (40 CFR 141.2).

Virus

A virus of fecal origin which is infectious to humans by waterborne transmission (40 CFR 141.2).

Waterborne Disease Outbreak

The significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the appropriate local or state agency (40 CFR 141.2).

Typical Records To Review

- Bacterial and chemical analyses of drinking water, including sampling dates and locations, dates of analyses, analytical methods used, and results of analyses
- Monthly operating reports (flow, chlorine residual, etc.)
- State and public notification of noncompliance with primary drinking water regulations
- Actions taken to correct violations of primary drinking water regulations
- Sanitary surveys of the water system conducted by the facility itself, a private consultant, or any local, state, or federal agency
- Public notification of noncompliance with secondary MCL for fluoride
- Records, or petitions for review of records for projects that may potentially cause contamination of a sole source aquifer
- Variances, exemptions, or waivers from the state
- Groundwater monitoring results, reports
- Design plans for potable water treatment plant
- Maps of the distribution system
- Formal or informal enforcement actions issued by the state or U.S. EPA

Typical Physical Features To Inspect

- Laboratory analysis facilities
- Drinking water treatment facility
- Storage facilities (elevated and underground)
- Locations where additional treatment occurs such as rechlorination
- Potable wells
- Surface water intakes

Checklist User Guidance

The SDWA requirements for public water systems are outlined in the auditor checklist contained in this document. A public water system (PWS) is defined as a system that has at least 15 service connections or serves an average of at least 25 people for at least 60 days per year. There are three types of PWSs:

1. **Community systems** serve at least 25 people year-round in their primary residences.
2. **Nontransient Noncommunity systems** serve at least 25 of the same persons for more than six months in a year (e.g., schools or factories that have their own water source).
3. **Transient Noncommunity systems** do not serve at least 25 of the same persons for more than six months in a year (e.g., campgrounds, highway rest stops that have their own water source).

This document is intended solely for guidance. No statutory or regulatory requirements are in any way altered by any statement(s) contained herein.

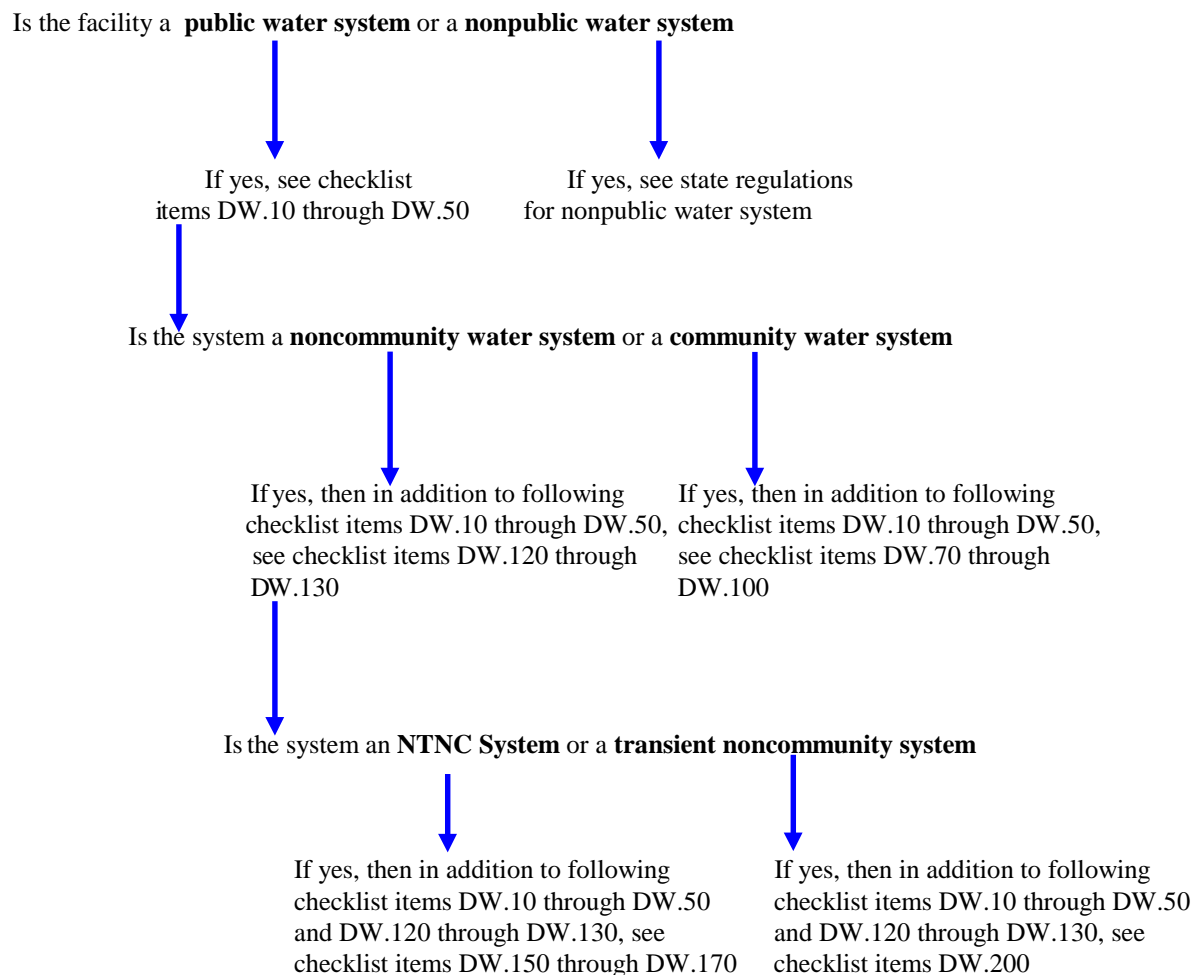
Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Each of these three types of public water systems is regulated differently. For example, in general, community water systems must comply with all regulations. Transient systems do not have to comply with the regulations for contaminants that cause chronic health effects to occur. However, all three types of public water systems must comply with the Total Coliform Rule, and requirements for nitrate and nitrite. The following table provides a summary of which drinking water regulations apply to each category of PWS.

Applicability of Current Federal Regulations			
Contaminant/Rule	Community Water Systems	Nontransient Non-community Water Systems	Transient Non-community Water Systems
Organic Contaminants	All	All	Some (only epichlorohydrin and acrylamide)
Total Trihalomethanes (TTHM)	Some (Only systems serving more than 10, 000)	None	None
Inorganic Contaminants	All	Some (All except arsenic and fluoride)	None
Nitrate and Nitrite	All	All	All
Radionuclides	All	None	None
Total Coliform	All	All	All
Surface Water Treatment	Some (Only PWSs using surface water sources or ground water sources under the direct influence of surface water)	Some (Only PWSs using surface water sources or ground water sources under the direct influence of surface water)	Some (Only PWSs using surface water sources or ground water sources under the direct influence of surface water)
Lead and Copper	All	All	None

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

As additional guidance, the following chart can be used to identify which checklist items are applicable to the facility being audited. This chart refers to the federal regulations; there may be additional state regulations to consider.



List of Acronyms and Abbreviations

ANSI	American National Standards Institute
BAT	Best Available Technology
CAS	Chemical Abstract Service
CDC	Center for Disease Control
CERL	U.S. Army Corps of Engineers Construction Engineering Research Laboratory
CFR	Code of Federal Regulations
CT	Residual Disinfectant Concentration (C in CT calculation)
CPE	Comprehensive Performance Evaluation
DBP	Disinfection Byproducts
DBPP	Disinfection Byproduct Precursors
DOC	Dissolved Organic Carbon
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FR	Federal Register
FY	Fiscal Year
GAC	Granular Activated Carbon Filter Beds

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

gal	Gallon
h	Hour(s)
HAA5	Haloacetic Acids (Five)
HWM	Hazardous Waste Management
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HPC	Heterotrophic Plate Count
ICP	Inductively Coupled Plasma
ICRU	The International Commission on Radiological Units and Measurements
kg	Kilogram
L	Liter
m	Mile(s)
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
mg	Milligram
mL	Milliliter
mm	Millimeter
mo	Month(s)
MP	Management Practice
MRDL	Maximum Residual Disinfectant Level
MRDLG	Maximum Residual Disinfectant Level Goal
mrem	Millirem
NBS	National Bureau of Standards
nm	Nanometers
NOV	Notice of Violation
NPDWS	National Primary Drinking Water Standards
NTNC	Nontransient noncommunity
NTU	Nephelometric Turbidity Unit
O & M	Operations and Maintenance
pCi	PicoCurie
PL	Public Law
SDWA	<i>Safe Drinking Water Act</i>
SIC	Standard Industrial Classification
SUVA	Specific Ultraviolet Absorption
TCDD	Dioxin
TOC	Total Organic Carbon
THM	Trihalomethane
TTHM	Total Trihalomethanes
TWS	Transient Noncommunity Water System
UIC	Underground Injection Control
U.S.C.	United States Code
USDW	Underground Source of Drinking Water
U.S. EPA	U.S. Environmental Protection Agency
yr	Year
>	greater than
<	less than
>/=	greater than or equal to
</=	less than or equal to

Index for Checklist Users

Categories	Refer To:	
	Checklist Item	Page Number:
General	DW.1.1 through DW.1.4	17
Public Water Systems		
General	DW.10.1 through DW.10.3	19
Monitoring/Sampling	DW.20.1 through DW.20.3	21
Disinfection and Filtration	DW.30.1 through DW.30.11	23
Lead and Copper	DW.40.1	33
Notification and Reporting Requirements	DW.50.1 through DW.50.5	35
Community Water Systems		
Standards	DW.70.1 and DW.70.3	39
Monitoring/Sampling	DW.80.1 through DW.80.16	41
Notifications	DW.90.1 and DW.90.2	57
Lead and Copper	DW.100.1 through DW.100.10	59
Noncommunity Water Systems		
Standards	DW.120.1	65
Monitoring/Sampling	DW.130.1 through DW.130.4	67
Nontransient Noncommunity (NTNC) Water System		
Standards	DW.150.1 and DW.150.2	71
Monitoring/Sampling	DW.160.1 through DW.160.9	73
Lead and Copper	DW.170.1 through DW.170.10	85
Transient Noncommunity Water System	DW.200.1 and DW.200.2	91
Please note: Additional Guidance on using this checklist for drinking water systems of provided on page 11.		

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

Checklist

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
DW.1 GENERAL	
DW.1.1. The current status of any ongoing or unresolved consent orders, compliance agreements, notices of violation (NOVs), interagency agreements, or equivalent state enforcement actions is required to be examined.	Determine if noncompliance issues have been resolved by reviewing a copy of the previous audit reports, consent orders, unilateral orders, compliance agreements, NOVs, interagency agreements, or equivalent state enforcement actions. (NOTE: For those open items, indicate what corrective action is planned and milestones established to correct problems.)
DW.1.2. Facilities are required to comply with all applicable federal regulatory requirements not contained in this checklist.	Determine if any new regulations have been issued since the finalization of this document. If so, annotate checklist to include new standards. Determine if the facility has activities or facilities that are regulated but not addressed in this checklist. Verify that the facility is in compliance with all applicable and newly issued regulations.
DW.1.3 Facilities are required to comply with state and local water quality regulations.	Verify that the facility is complying with state and local water quality requirements. Verify that the facility is operating according to permits issued by the state or local agencies. (NOTE: Issues typically regulated by state and local agencies include: <ul style="list-style-type: none"> – more stringent contaminant level requirements certification and training requirements – water system surveys – reporting requirements – monitoring frequency – use of groundwater – use and maintenance of wells – wellhead protection programs – cross connection control and backflow prevention – O & M practices such as: maintenance of a disinfectant residual throughout the distribution system; proper maintenance of the distribution system;

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>proper disinfection of replaced or repaired mains; main flushing – secondary drinking water regulations – UIC programs.)</p>
<p>DW.1.4. Analysis of all samples, except turbidity, free chlorine residual, temperature, and pH, to determine compliance with MCLs must be performed in a state-certified laboratory or by a state-approved individual (40 CFR 141.23(k)(6), 141.24(f)(17), 141.24(h)(19), and 141.28).</p>	<p>Verify that laboratory is certified by reviewing documentation of state certification for laboratory analysis.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>PUBLIC WATER SYSTEMS</p> <p>DW.10</p> <p>General</p>	<p>(NOTE: The checklist items below apply to public water systems (PWSs). A PWS is defined as a system that has at least 15 service connections or serves an average of at least 25 people for at least 60 days per year.) A PWS includes:</p> <ul style="list-style-type: none"> – any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system – any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. <p>The term “Public Water System(s)” does not include any “special irrigation district.” A public water system is either a community water system or a noncommunity water system. See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.10.1. Records must be kept of actions taken to correct violations of primary drinking water regulations for at least 3 yr (40 CFR 141.33(b)).</p>	<p>Verify that records are kept of actions taken to correct violations of primary drinking water regulations for at least 3 yr.</p> <p>Determine if there are recurring work programs, spare parts and supplies list, equipment calibration and maintenance history records.</p>
<p>DW.10.2. Public water systems which do not collect 5 or more routine total coliform samples per month are required to undergo an initial sanitary survey according to a specified schedule and maintain records of those reviews (40 CFR 141.21(d) and 141.33(c)).</p>	<p>Verify that noncommunity water systems which do not collect five or more routine samples per month have undergone an initial sanitary survey by June 29, 1999 and then undergo a sanitary survey every 5 yr thereafter.</p> <p>(NOTE: Noncommunity water systems using only protected and disinfected groundwater are only required to undergo a sanitary survey every 10 yr after the initial survey.)</p> <p>Verify that community water systems that collect less than five routine biological samples per month undergo a sanitary survey every 5 yr since June 29, 1994.</p> <p>Verify that records of sanitary surveys are kept for at least 10 yr.</p> <p>Verify that the sanitary surveys have been performed by the state or an agent approved by the state.</p> <p>Verify that, if the state has requested additional measures to improve drinking water quality, those measures have been implemented.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.10.3. Public water systems that use point of entry devices to comply with MCL are required to meet specific standards (40 CFR 141.100 and 141.101).</p>	<p>Determine if the public water system uses a point of entry device to comply with MCLs.</p> <p>Verify that the public water system has developed and obtained state approval for a monitoring plan prior to the point of entry devices being installed.</p> <p>Verify that the parameters of the plan are being followed.</p> <p>(NOTE: The design and application of the point-of-entry devices must consider the tendency for increase in heterotrophic bacteria concentrations in water treated with activated carbon.)</p> <p>Verify that all consumers are protected and every building connected to the system has a point-of-entry device installed, maintained, and adequately monitored.</p> <p>(NOTE: Public water systems may not use bottled water or point of use devices to achieve compliance with an MCL. But, bottled water or point of use devices may be used on a temporary basis to avoid unreasonable risk to health.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>PUBLIC WATER SYSTEMS</p> <p>DW.20 Monitoring/Sampling</p>	<p>(NOTE: The checklist items below apply to public water systems (PWSs). A PWS is defined as a system that has at least 15 service connections or serves an average of at least 25 people for at least 60 days per year.) A PWS includes:</p> <ul style="list-style-type: none"> – any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system – any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. <p>The term “Public Water System(s)” does not include any “special irrigation district.” A public water system is either a community water system or a noncommunity water system. See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.20.1. Total coliform samples are required to be collected at regular time intervals throughout the month except at a system which uses only groundwater and serves 4900 person or fewer (40 CFR 141.21(a)(4)).</p>	<p>Verify that total coliform samples are collected at regular intervals at the frequency required based on population.</p> <p>(NOTE: Systems that use groundwater (except groundwater under the influence of surface water) and serve 4900 persons or fewer may collect all required samples on a single day if they are being taken from different sites.)</p>
<p>DW.20.2 Public water systems that use surface water or groundwater under the direct influence of surface water that do not practice filtration are required to collect at least one total coliform sample near the first service connection each day the turbidity level of the source water exceeds 1 NTU (40 CFR 141.21(a)(5) and 141.74(b)(1)).</p>	<p>Verify that, if the turbidity exceeded 1 NTU, total coliform samples were taken within 24 h of the first exceedance by reviewing the records on turbidity levels and coliform sampling.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.20.3. When a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 h of being notified of the positive result (40 CFR 141.21(b)(1) through 141.21(b)(5), 141.21(b)(7) and 141.21(e)(1)).</p>	<p>Verify that if the system collects more than 1/mo routine sample is collected, at least three repeat samples are collected for each total coliform-positive sample found.</p> <p>Verify that if one or less routine sample per month is collected, no less than four repeat samples are collected for each total coliform-positive sample found.</p> <p>Verify that at least one of the repeat samples is collected from the sampling tap where the original total coliform positive sample was taken.</p> <p>Verify that at least one repeat sample was taken at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site.</p> <p>Verify that the sampling process is repeated until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms is exceeded and the state is notified.</p> <p>Verify that all repeat samples are collected on the same day.</p> <p>Verify that if one or more of the repeat samples is total coliform-positive, an additional set of repeat samples is collected within 24 h of notification of the positive result.</p> <p>Verify that if a repeat sample is total coliform-positive it is also analyzed for fecal coliforms.</p> <p>(NOTE: The system may test for <i>E. coli</i> instead of fecal coliforms.)</p> <p>(NOTE: If a system collecting fewer than five routine samples per month has one or more total coliform-positive samples and the state does not invalidate the samples, it must collect at least five routine samples during the next month the system provides water to the public. The state may waive this requirement if certain conditions are met.)</p> <p>Verify that all routine and repeat samples which are not invalidated are included in determining compliance with the MCL for total coliform.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>PUBLIC WATER SYSTEMS</p> <p>DW.30 Disinfection and Filtration</p>	<p>(NOTE: The checklist items below apply to public water systems (PWSs). A PWS is defined as a system that has at least 15 service connections or serves an average of at least 25 people for at least 60 days per year.) A PWS includes:</p> <ul style="list-style-type: none"> – any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system – any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. <p>The term “Public Water System(s)” does not include any “special irrigation district.” A public water system is either a community water system or a noncommunity water system. See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.30.1. Public water systems that use surface water sources or groundwater sources under direct influence of a surface water source must provide filtration as a treatment technique for microbiological contaminants unless certain criteria are met (40 CFR 141.71(a) and 141.71(b)).</p>	<p>(NOTE: Public water systems that use a groundwater source under the direct influence of surface water are not required to meet these conditions to avoid filtration until 18 mo after the state has determined that the system is under the direct influence of surface water.)</p> <p>Verify that filtration of drinking water is performed unless all of the following conditions for source water are met:</p> <ul style="list-style-type: none"> – the fecal coliform concentration is less than or equal to 20/100 mL or total coliform concentration is equal to or less than 100/100 mL in representative samples of the source water immediately prior to the first or only point of disinfectant application in at least 90 percent of the measurements made in the last 6 mo that the system served water to the public on an ongoing basis – the turbidity level does not exceed 5 NTU in representative samples of the source water immediately prior to the first or only point of disinfectant application, unless state determines otherwise and there has not been more than two events in the past 12 mo that the system served water to the public or more than five events in the past 120 mo that the system served water to the public. <p>Verify that filtration of drinking water is done unless all the following site-specific conditions are met:</p> <ul style="list-style-type: none"> – meets the requirements of 40 CFR 141.72(a)(1) (see checklist item DW.30.3) for disinfection treatment of <i>Giardia lamblia</i> for at least 11 of the 12 previous mo – meets 40 CFR 141.72(a)(2) through 141.72(a)(4) (see checklist item DW.30.3) at all times – maintains a watershed control program for <i>Giardia lamblia</i> cysts and viruses in the source water, including:

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<ul style="list-style-type: none"> - identification of watershed characteristics - monitoring occurrence of activities that have adverse effects - demonstrates through ownership and/or written agreements that the control of adverse effects of human activities are regulated - submits annual reports to the state - subject to annual onsite inspection by the state or a party approved by the state, to assess watershed control program - has not been identified as a source of waterborne disease or threat or has been modified sufficiently to prevent recurrence - complies with MCL for total coliforms as defined in 40 CFR 141.63 (see checklist item DW.70.2 for a PWS which is a community water system and DW.150.1 for a PWS which is a NTNC water system) for at least 11 of the previous 12 mo - complies with requirements for trihalomethanes as listed on 40 CFR 141.12 (see checklist item DW.70.1) and 141.30 (see checklist item DW.80.11) until January 1, 2002 and thereafter complies with the requirements for total trihalomethanes, haloacetic acids (five), bromate, chlorite, chlorine, chloramine, and chlorine dioxide (see Appendix K of this document).
<p>DW.30.2. Systems that do not meet the criteria necessary for exclusion from filtration for public water systems that use a surface water source or a groundwater source under the direct influence of surface water must provide filtration that meets specific standards by June 29, 1993, or within 18 mo after being required to provide filtration, whichever is later (40 CFR 141.73, 141.74(c)(1), through 141.74(c)(4)).</p>	<p>Verify that, if conventional or direct filtration is used, the following are met:</p> <ul style="list-style-type: none"> - a turbidity level of 0.5 NTU or less in 95 percent of measurements taken each month - the turbidity level of representative samples of filtered water at no time exceeds 5 NTU - systems serving at least 10,000 people meet the turbidity requirements in 40 CFR 141.173(a) starting January 1, 2002. <p>Verify that, if slow sand filtration is used, the following are met:</p> <ul style="list-style-type: none"> - the turbidity level of representative samples of a system's filtered water is 1 NTU or less in 95 percent of the monthly measurements. - the turbidity level of representative samples of a system's filtered water at no time exceeds 5 NTU. <p>Verify that, if diatomaceous earth filtration is used, the following is met:</p> <ul style="list-style-type: none"> - the turbidity level of representative samples of a system's filtered water is less than or equal to 1 NTU in at least 95 percent of the measurements taken each month - the turbidity level of representative samples of a system's filtered water at no time exceeds 5 NTU. <p>Verify that, if other filtration technologies are used, they have been approved by the state.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT											
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS										
	<p>Verify that starting June 29, 1993 or when filtration is installed, turbidity measurements are performed on representative samples of the system's filtered water every 4 h that the system serves water to the public.</p> <p>Verify that as of June 29, 1993, or whenever filtration is installed, the residual disinfectant concentration of water entering the distribution system is monitored continuously and the lowest value recorded each day.</p> <p>Verify that, if there is a failure in the continuous monitoring equipment, grab sampling is done every 4 h.</p> <p>(NOTE: Grab sampling must be conducted until equipment is repaired. If equipment is not repaired within 5 working days, the system is in violation.)</p> <p>(NOTE: Systems serving 3300 or fewer person can use grab sampling instead of continuous monitoring if the following daily frequencies are met:</p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">System size by population</th> <th style="text-align: center;">Samples/day</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">500</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: center;">501 - 1000</td> <td style="text-align: center;">2</td> </tr> <tr> <td style="text-align: center;">1001 - 2500</td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: center;">2501 - 3300</td> <td style="text-align: center;">4.</td> </tr> </tbody> </table> <p>Verify that, any time the residual disinfectant concentration falls below 0.2 mg/L in a system using grab sampling, the system takes a grab sample every 4 h until the residual disinfectant concentration is equal to or greater then 0.2 mg/L.</p> <p>Verify that the residual disinfectant concentration is measured at least at the same points in the distribution system and at the same time as total coliforms are sampled.</p>	System size by population	Samples/day	500	1	501 - 1000	2	1001 - 2500	3	2501 - 3300	4.
System size by population	Samples/day										
500	1										
501 - 1000	2										
1001 - 2500	3										
2501 - 3300	4.										

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.30.3. Public water systems that use a surface water source or a groundwater source under direct influence of a surface water source that is not required to provide filtration are required to provide disinfection treatment by December 30, 1991 (40 CFR 141.72(a)).</p>	<p>Verify that the following requirements for disinfection are met for systems that are not required to provide filtration:</p> <ul style="list-style-type: none"> – it ensures 99.9 percent (3-log) inactivation of <i>Giardia lamblia</i> cysts every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 141.74 – it ensures 99.99 percent (4-log) inactivation of virus every day except for once per month by meeting the required CT applicable to the systems particular water quality parameters as outlined in 40 CFR 141.74 – the CT values are calculated daily as specified in 40 CFR 141.74(b)(3) – the disinfection system has: <ul style="list-style-type: none"> – a backup distribution system with automatic startup and alarm for insuring continuous disinfection application while water is delivered through the distribution system – automatic shutoff when there is less than 0.2 mg/L residual disinfectant – the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h – the residual disinfectant concentration, measured as total chlorine, combined chlorine, or chlorine dioxide at points where total coliform samples are taken is not undetectable in more than 5 percent of samples each month for more than 2 consecutive months. <p>(NOTE: Water in a distribution system with a heterotrophic bacteria concentration less than or equal to 500 mL, measured as heterotrophic plate count (HPC) is deemed to have a detectable disinfectant residual.)</p>
<p>DW.30.4. Public water systems that use a surface water source or a groundwater source under direct influence of a surface water source that provide filtration or that are required by the state to install filtration must meet specific disinfection requirements by June 29, 1993 or within 18 mo of being required to install filtration (40 CFR 141.72(b) and 141.73).</p>	<p>Determine if the filtration is provided for drinking water.</p> <p>Verify that the following requirements for disinfection for filtered systems are provided:</p> <ul style="list-style-type: none"> – it ensures 99.9 percent (3-log) inactivation of <i>Giardia lamblia</i> cysts – it ensures 99.99 percent (4-log) inactivation of viruses – the residual disinfectant concentration in water entering distribution system is not less than 0.2 mg/L for more than 4 h. – the residual disinfectant concentration throughout the distribution system is not undetectable in more than 5 percent of samples each month for any 2 consecutive mo the system serves water to the public – analytical methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection.

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.30.5. Public water systems that use a surface water source and do not provide filtration are required to report specific information monthly to the state beginning December 31, 1990, unless the state has determined that filtration is required, until filtration is in place (40 CFR 141.75(a)).</p>	<p>(NOTE: The state may specify alternative reporting requirements, as appropriate, until filtration is in place.)</p> <p>Verify that the following listed information is reported to the state at the indicated times:</p> <ul style="list-style-type: none"> – source water quality information within 10 days after the end of each month the system serves water to the public – disinfection information within 10 days after the end of each month the system serves water to the public – a report summarizing compliance with all watershed control programs no later than 10 days after the end of each federal fiscal year – a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the federal fiscal year – the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day – when turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day – any time the residual falls below 0.2 mg/L in the water entering the distribution system as soon as possible, but no later than by the end of the next business day. <p>(NOTE: See the complete text of 40 CFR 141.75(a) for more details on what information and how this information is to be reported.)</p>
<p>DW.30.6. Public water systems that use a groundwater source under the direct influence of surface water and do not provide filtration treatment must report specific information to the state monthly starting December 31, 1990, or 6 mo after the state determines that the groundwater source is under the direct influence of surface water, whichever is later unless the state determines that filtration is required (40 CFR 141.75(a)).</p>	<p>Verify that the following listed information is reported to the state at the indicated times:</p> <ul style="list-style-type: none"> – source water quality information within 10 days after the end of each month the system serves water to the public – disinfection information within 10 days after the end of each month the system serves water to the public – a report summarizing compliance with all watershed control programs no later than 10 days after the end of each federal fiscal year – a report on the onsite inspection conducted during that year, unless it was conducted by the state, no later than 10 days after the end of the federal fiscal year – the occurrence of a waterborne disease outbreak potentially attributable to that water system as soon as possible, but no later than by the end of the next business day – when turbidity exceeds 5 NTU, as soon as possible but no later than the end of the next business day – any time the residual falls below 0.2 mg/L in the water entering the

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>distribution system as soon as possible, but no later than by the end of the next business day.</p> <p>(NOTE: See the complete text of 40 CFR 141.75(a) for more details on what information and how this information is to be reported.)</p>
<p>DW.30.7. Public water systems that use a surface water source or a groundwater source under the direct influence of surface water that provide filtration must report specific information monthly to the state starting June 29, 1993 or when filtration is installed, whichever is later (40 CFR 141.75(b)).</p>	<p>Verify that by June 29, 1993, or whenever filtration is installed, the following information is provided to the state in the indicated time frame:</p> <ul style="list-style-type: none"> – turbidity measurements within 10 days after the end of each month the system serves water to the public – disinfection information within 10 days after the end of each month the system serves water to the public – notice of an occurrence of a waterborne disease outbreak, as soon as possible but no later than by the end of the next business day – when the turbidity exceeds 5 NTU, as soon as possible, but no later than the end of the next business day – any time the residual falls below 0.2 mg/L in the water entering the distribution system, as soon as possible, but no later than by the end of the next business day. <p>(NOTE: See the complete text of 40 CFR 141.75(b) for more details on what information and how this information is to be reported.)</p>
<p>DW.30.8. U.S. EPA has set certain standards for analytic procedures that must be used and followed to demonstrate compliance with disinfection and filtration requirements (40 CFR 141.74).</p>	<p>Verify that analytic methods as specified in 40 CFR 141.74 are used to demonstrate compliance with the requirements for filtration and disinfection.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.30.9. As of January 1, 2002, Subpart H systems which provide filtration serving at least 10,000 people must provide treatment that complies with certain treatment technique requirements (40 CFR 141.170(a), 141.171, 141.173, and 141.74).</p>	<p>(NOTE: These requirements for filtration and disinfection are in addition to criteria under which filtration and disinfection are required under 40 CFR 141.70 through 141.75.)</p> <p>Verify that each Subpart H system serving at least 10,000 people provides treatment of its source water by installing and properly operating water treatment processes that reliably achieve:</p> <ul style="list-style-type: none"> – at least 99 percent (2-log) removal of <i>Cryptosporidium</i> between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer for filtered systems, or <i>Cryptosporidium</i> control under the watershed control plan for unfiltered systems – compliance with the profiling and benchmark requirements under 40 CFR 141.172. <p>Verify that filtration is provided that meets with one of the following by January 1, 2002:</p> <ul style="list-style-type: none"> – conventional filtration or direct filtration that results in: <ul style="list-style-type: none"> – the turbidity level of representative samples of a system’s filtered water is ≤ 0.3 NTU in at least 95 percent of the measurement taken each month – the turbidity level of representative samples of the system’s filtered water at no time exceeds 1 NTU – alternate technologies approved by the state. <p>Verify that the systems monitor individual filters continuously and record results every 15 min.</p> <p>(NOTE: When using conventional filtration or direct filtration, a system that uses lime softening may acidify representative samples prior to analysis using a protocol approved by a state.)</p> <p>(NOTE: In addition to the requirements of 40 CFR 141.71, a public water system that does not provide filtration must maintain a watershed control program under 40 CFR 141.71(b)(2), which does the following to minimize the potential for contamination by <i>Cryptosporidium</i> oocysts in the source water:</p> <ul style="list-style-type: none"> – identify watershed characteristics and activities which may have an adverse effect on source water quality – monitor the occurrence of activities which may have an adverse effect on source water quality.) <p>(NOTE: The state must determine whether the watershed control program is adequate to limit potential contamination by <i>Cryptosporidium</i> oocysts. The adequacy of the program must be based on the comprehensiveness of the</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	watershed review; the effectiveness of the system's program to monitor and control detrimental activities occurring in the watershed; and the extent to which the water system has maximized land ownership and/or controlled land use within the watershed.)
DW.30.10. Public water system may not begin construction of uncovered finished water storage facilities after February 16, 1999 (40 CFR 141.170(a) and 141.170(c)).	Verify that each Subpart H system serving at least 10,000 people do not begin construction of uncovered finished water storage facilities after February 16, 1999.
DW.30.11. As of January 1, 2002, Subpart H systems serving at least 10,000 people providing disinfection must perform disinfection profiling and benchmarking (40 CFR 141.170(a) and 141.172).	<p>(NOTE: These requirements for filtration and disinfection are in addition to criteria under which filtration and disinfection are required under 40 CFR 141.70 through 141.75.)</p> <p>Verify that the public water systems determines its TTHM annual average using the procedure in 40 CFR 141.172(a)(1) and its HAA5 annual average using the procedure in 40 CFR 141.172 (a)(2).</p> <p>(NOTE: The annual average is the arithmetic average of the quarterly averages of four consecutive quarters of monitoring.)</p> <p>(NOTE: The system may request that the state approve a more representative annual data set for the purpose of determining applicability of the requirements of this section. The state may require that a system use a more representative annual data set for the purpose of determining applicability of the requirements of this section.)</p> <p>Verify that the system submits data to the state in accordance with the determination procedures used.</p> <p>Verify that any system having either a TTHM annual average ≥ 0.064 mg/L or an HAA5 annual average ≥ 0.048 mg/L during the required period develops a disinfection profile of its disinfection practice for a period of up to 3 yr.</p> <p>(NOTE: The details of how a disinfection profile is developed can be found in 40 CFR 172(b).)</p> <p>Verify that any system required to develop a disinfection profile that decides to make a significant change to its disinfection practice consults with the state prior to making such a change.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>(NOTE: Significant changes to disinfection practice are:</p> <ul style="list-style-type: none"> – changes to the point of disinfection – changes to the disinfectant(s) used in the treatment plant – changes to the disinfection process – any other modification identified by the state. <p>Verify that any system modifying its disinfection practice calculates its disinfection benchmark using the procedure specified 40 CFR 141.172(c)(2)(i) through (ii).</p> <p>Verify that systems using either chloramines or ozone for primary disinfection calculate the disinfection benchmark for viruses using a method approved by the state.</p>

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>PUBLIC WATER SYSTEMS</p> <p>DW.40 Lead and Copper</p>	<p>(NOTE: The checklist items below apply to public water systems (PWSs). A PWS is defined as a system that has at least 15 service connections or serves an average of at least 25 people for at least 60 days per year.) A PWS includes:</p> <ul style="list-style-type: none"> – any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system – any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. <p>The term “Public Water System(s)” does not include any “special irrigation district.” A public water system is either a community water system or a noncommunity water system. See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p> <p>(NOTE: Checklist items DW.100.1 through DW.100.10 (for community water systems) and DW.170.1 through DW.170.10 (for NTNC water systems) contain additional requirements for the control of lead and copper in drinking water.)</p>
<p>DW.40.1. The use of pipe, solder, or flux that contains lead is not allowed in specific situations (40 CFR 141.43(a)(1) and 141.43(d)).</p>	<p>Verify that lead pipe, solder, or flux is not used in the installation or repair of either of the following:</p> <ul style="list-style-type: none"> – any public water system – any plumbing in a residential facility providing water for human consumption which is connected to a public water system. <p>(NOTE: This does not apply to leaded joints necessary for the repair of cast iron pipes.)</p> <p>(NOTE: Lead-free is defined as not more than 0.2 percent content for solders and flux and not more than 8.0 percent lead in reference to pipes and pipe fittings. In addition, pipes and pipe fittings must meet NSF Standard 61, Section 9.)</p>

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>PUBLIC WATER SYSTEMS</p> <p>DW.50 Notification and Reporting Requirements</p>	<p>(NOTE: The checklist items below apply to public water systems (PWSs). A PWS is defined as a system that has at least 15 service connections or serves an average of at least 25 people for at least 60 days per year.) A PWS includes:</p> <ul style="list-style-type: none"> – any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system – any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. <p>The term “Public Water System(s)” does not include any “special irrigation district.” A public water system is either a community water system or a noncommunity water system. See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.50.1. Public water systems are required to maintain on the premises, or at a convenient location specific records (40 CFR 141.33(a), 141.33(b), and 141.33(d)).</p>	<p>Verify that records of bacteriological analyses are kept for a minimum of 5 yr.</p> <p>Verify that records of chemical analyses are kept for a minimum of 10 yr.</p> <p>Verify that records concerning a variance or exemption granted to the system are kept for a period ending not less than 5 yr following the expiration of the variance or exemption.</p> <p>Verify that records relating to sanitary surveys are kept for a minimum of 10 yr.</p>
<p>DW.50.2. When primary drinking water standards (i.e. MCLs and MRDLs) are exceeded, or the owner or operator of a public waters systems fails to comply with an applicable treatment technique, public notifications must be made (40 CFR 141.32).</p>	<p>Verify that if there was an exceedance the following public notification procedures were followed:</p> <ul style="list-style-type: none"> – notices were placed in a daily newspaper of general circulation in the area served by the system as soon as possible, but no later than 14 days after the violation or failure – notices were placed in a weekly newspaper of general circulation if there is no daily newspaper – notices were issued by mail delivery, by direct mail or with the water bill, or by hand delivery within 45 days after the violation or failure. <p>(NOTE: The state may waive mail or hand delivery if it is determined that the violation or failure is corrected within the 45-day period.)</p> <p>Verify that if it was an acute violation, the public radio and television stations were notified no later than 72 h after the violation.</p> <p>Verify that if public notification was made, it was made according to U.S. EPA requirements as specified in 40 CFR 141.32.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>Verify that following the initial notice, additional notice is given at least once every 3 mo by mail delivery, or by hand delivery, for as long as the violation exists.</p> <p>(NOTE: Instead of the requirements outlined here, community water systems in an area that is not served by a daily or weekly newspaper of general circulation must give notice by hand delivery or by continuous posting in conspicuous places within the area served by the system. Notice must be given within 72 h for acute violations and 14 days for other violations. Noncommunity water systems may also follow these methods.)</p> <p>Verify that a copy of the most recent public notice for any outstanding violation of any MCL, or MRDL or treatment technique requirement or any variance or exemption schedule has been given to all new billing units or new hook-ups prior to or at the time service begins.</p>
<p>DW.50.3. Public water systems must send any test measurement to the state on analysis results pertaining to applicable biological, turbidity, radioactivity, and chemical standards, and on any failure to comply with national primary drinking water regulations (40 CFR 141.31).</p>	<p>Verify that, in general, reports of any test measurement or analysis results are sent within the first 10 days following the month in which the result is received or the first 10 days following the end of the required monitoring period.</p> <p>Verify that the facility reported failure to comply with any national primary drinking water regulations to the state within 48 h.</p>
<p>DW.50.4. Public water systems which are required to sample quarterly for disinfection byproducts, disinfectants, and disinfection byproducts precursors (DBPPs) must meet specific reporting requirements (40 CFR 141.134).</p>	<p>Verify that systems required to sample quarterly or more frequently for disinfection byproducts, disinfectants, and DBPPs report to the state within 10 days after the end of each quarter in which samples were collected.</p> <p>Verify that systems required to sample less frequently than quarterly report to the state within 10 days after the end of each monitoring period in which samples were collected.</p> <p>Verify that the information in Appendix M of this document is reported, as applicable.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.50.5. As of January 1, 2002, Subpart H systems serving at least 10,000 people that provide filtration are required to report specific information to the state (40 CFR 141.175).</p>	<p>Verify that systems that provide conventional filtration treatment or direct filtration report the following monthly:</p> <ul style="list-style-type: none"> - turbidity measurements are reported within 10 days after the end of each month the system serves water to the public and includes: <ul style="list-style-type: none"> - the total number of filtered water turbidity measurements taken during the month - the number and percentage of filtered water turbidity measurements taken during the month that are less than or equal to the turbidity limits - the date and value of any turbidity measurements taken during the month which exceed 1 NTU, or which exceed the maximum level set by the state - that they have conducted individual filter turbidity monitoring, within 10 days after the end of each month that the system serves water to the public - individual filter turbidity measurement results, within 10 days after the end of each month that the system serves water to the public only if measurements demonstrate one or more of the following conditions: <ul style="list-style-type: none"> - for any individual filter that has a measured turbidity level of > 1.0 NTU in two consecutive measurements taken 15 min apart, the system reports the filter number, the turbidity measurement, and the date on which the exceedance occurred. In addition, the system must either produce a filter profile for the filter within 7 days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance - for any individual filter that has a measured turbidity level of > 0.5 NTU in two consecutive measurements taken 15 min apart at the end of the first 4 h of continuous filter operation after the filter has been backwashed or otherwise taken offline, the system reports the filter number, the turbidity, and the date(s) on which the exceedance occurred. In addition, the system must either produce a filter profile for the filter within 7 days of the exceedance (if the system is not able to identify an obvious reason for the abnormal filter performance) and report that the profile has been produced or report the obvious reason for the exceedance - for any individual filter that has a measured turbidity level of > 1.0 NTU in two consecutive measurements taken 15 min apart at any time in each of 3 consecutive months, the system reports the filter number, the turbidity measurement, and the date on which the exceedance occurred. In addition, the system conducts a self-assessment of the filter within 14 days of the exceedance and reports that the self-assessment was conducted - for any individual filter that has a measured turbidity level of > 2.0 NTU in two consecutive measurements taken 15 min apart at any time in each of 2 consecutive months, the system reports the filter number, the turbidity measurement, and the date on which the exceedance

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>occurred. In addition, the system arranges for the conduct of a comprehensive performance evaluation by the state or a third party approved by the state no later than 30 days following the exceedance and have the evaluation completed and submitted to the state no later than 90 days following the exceedance.</p> <p>Verify that systems maintain the results of individual filter monitoring for at least 3 yr.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
COMMUNITY WATER SYSTEMS DW.70 Standards	(NOTE: A community water system is a public water system that serves at least 25 people year round in their primary residences. Community water systems must also comply with the standards for public water systems (see DW.10.1 through DW.50.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)
DW.70.1. Community water systems are required to meet specific MCLs for inorganic and organic chemicals, fluorides, radium 226, radium-228, gross alpha particle radio activity, beta particles, and photon radioactivity from manmade radionuclides (40 CFR 141.11(a), 141.11(b), 141.12, 141.15, 141.16(a), and 141.60 through 141.62).	<p>Verify that combined radium-226 and radium-228 do not exceed 5 pCi/L.</p> <p>Verify that gross alpha particle radioactivity does not exceed 15 pCi/L.</p> <p>Verify that the average annual concentration of beta particles and photon radioactivity from manmade radionuclides does not produce an average dose rate equal to the total body or any internal organ greater than 4 mrem/yr.</p> <p>Verify that the MCL of 4.0 mg/L for fluoride is not exceeded.</p> <p>Verify that the MCLs outlined in Appendix A and Appendix B of this document are not exceeded.</p>
DW.70.2. Community water systems are required to meet specific MCLs for microbiological contaminants (40 CFR 141.63).	<p>Verify that systems which collect at least 40 bacteriological samples per month have no more than 5 percent of the samples collected during a month that are total coliform positive.</p> <p>Verify that systems which collect less than 40 bacteriological samples per month have no more than one sample collected per month that is total coliform positive.</p> <p>Verify that there are no fecal coliform-positive repeat samples or <i>E. coli</i>-positive repeat samples, or any total coliform-positive repeat samples following a fecal coliform-positive or <i>E coli</i>-positive routine sample.</p>
DW.70.3. Community water systems are required to meet specific MCLs and MRDLs related to disinfection (40 CFR 141.64 and 141.65).	<p>Verify that community water systems meet the MCL for disinfection by-products and the MRDLs outlined in Appendix K of this document.</p> <p>(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning January 1, 2004.)</p> <p>(NOTE: A system that is installing GAC or membrane technology to comply with MCL requirements may apply to the state for an extension of up to 24 mo past the</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	compliance dates, but not beyond January 1, 2004. In granting the extension, states must set a schedule for compliance and may specify any interim measures that the system must take. Failure to meet the schedule or interim treatment requirements constitutes a violation of a National Primary Drinking Water Regulation.)

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>COMMUNITY WATER SYSTEMS</p> <p>DW.80 Monitoring/Sampling</p>	<p>(NOTE: A community water system is a public water system that serves at least 25 people year round in their primary residences. Community water systems must also comply with the standards for public water systems (see DW.10.1 through DW.50.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.80.1. Community water systems are required to meet specific monitoring requirements for inorganic contaminants (40 CFR 141.23(a)).</p>	<p>Verify that groundwater systems:</p> <ul style="list-style-type: none"> – take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (a sampling point) beginning in the compliance period starting January 1, 1993 – take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. <p>Verify that surface water systems:</p> <ul style="list-style-type: none"> – 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 that is representative of each source after treatment (a sampling point) beginning in the compliance period starting January 1, 1993 – takes each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. <p>(NOTE: In relation to these requirements, surface water systems include systems with a combination of surface and ground sources.)</p> <p>Verify that if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>(NOTE: The state may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed if the detection limit of the method used for analysis is less than one fifth the MCL and compositing is done in a laboratory.)</p> <p>Verify that if the concentration in a composite sample is greater than or equal to one- fifth of the MCL of any inorganic chemical, a followup sample is analyzed within 14 days from each sampling point included in the composite and analyzed for the contaminants which exceeded one fifth of the MCL in the composite sample.</p> <p>(NOTE: Detection limits for each analytical methods and MCLs for each inorganic contaminant are listed in Appendix C of this document.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>Verify that for groundwater systems, inorganic monitoring is repeated at least once every compliance period (every 3 yr), and samples are taken quarterly for at least two quarters if a MCL is violated.</p> <p>Verify that for surface water systems, inorganic sampling is repeated annually and samples are taken quarterly for at least four quarters if a MCL is violated.</p> <p>(NOTE: The state may issue a waiver reducing the required monitoring.)</p>
<p>DW.80.2. Community water systems are required to meet specific monitoring requirements for asbestos (40 CFR 141.23(b)).</p>	<p>Verify that asbestos is monitored during the first 3-yr compliance period of each 9-yr compliance cycle starting January 1, 1993.</p> <p>(NOTE: The community water system may apply to the state for a waiver of monitoring if they believe that asbestos is not an issue.)</p> <p>Verify that if the system is vulnerable to asbestos contamination only because of corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.</p> <p>Verify that if the system is vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where contamination is most likely to occur.</p> <p>Verify that when the MCL is exceeded, monitoring is done quarterly.</p>
<p>DW.80.3. Community water systems are required to meet specific monitoring requirements for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, and thallium (40 CFR 141.23(c)).</p>	<p>Verify that monitoring is done as follows:</p> <ul style="list-style-type: none"> – groundwater systems: take one sample at each sampling point during each compliance period – surface water systems (or combined surface/ground): take one sample annually at each sampling point – when MCLs are exceeded, monitoring is done quarterly. <p>(NOTE: States may grant a public water system a waiver for the monitoring of cyanide.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.80.4. All community water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23(e)).</p>	<p>Verify that the following schedules are met for monitoring of nitrate:</p> <ul style="list-style-type: none"> – community water systems served by groundwater monitor annually starting January 1, 1993 – community water systems served by surface water monitor quarterly starting January 1, 1993. <p>Verify that when the MCL for nitrate is exceeded community water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL.</p> <p>(NOTE: After the initial round of quarterly sampling is completed, each community system which is monitoring annually shall take the subsequent samples during the quarters which previously resulted in the highest analytical result.)</p> <p>Verify that public water systems take one sample at each sampling point in the compliance period beginning January 1, 1993 and ending December 31, 1995 for nitrite.</p> <p>(NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.)</p> <p>Verify that community systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL.</p> <p>Verify that systems which are monitoring annually for nitrites take each subsequent sample during the quarters which previously resulted in the highest analytical result.</p> <p>Verify that, when nitrate or nitrite samples indicate an exceedance of the MCL, a confirmation sample is taken within 24 h of receipt of the results.</p> <p>(NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedance and must take and analyze a confirmation sample within 2 weeks.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.80.5. Beginning with the initial compliance period, monitoring of the MCLs at community water systems (see Table 2 of Appendix A of this document) is required to be done according to specific parameters (40 CFR 141.24(f)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point of the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or combined surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each community water system takes four consecutive quarterly samples for each contaminant, except vinyl chlorides.</p> <p>(NOTE: If the initial monitoring for contaminants is completed by December 1992 and none of the contaminants listed are found, then each system shall take one sample annually starting with the initial compliance period.)</p> <p>(NOTE: After a minimum of 3 yr of sampling, the state may reduce the number of samples to one each compliance period.)</p> <p>Verify that if a contaminant, except vinyl chloride, is detected at a level exceeding 0.0005 mg/L in any sample, the system monitors quarterly at each sampling point which resulted in a detection.</p> <p>Verify that groundwater systems which have detected one or more of the following two-carbon organic compounds; trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene monitor quarterly for vinyl chlorides at each sampling point at which one or more of the two-carbon organic compounds was detected.</p> <p>Verify that when the MCLs are exceeded, monitoring is conducted quarterly until the state determines that the system is reliably and consistently below the MCL.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.80.6. Monitoring for organic contaminants at community water systems (see Table 3 of Appendix A of this document) is required to be done according to specific parameters (40 CFR 141.24(h)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each community water system takes four consecutive quarterly samples for each contaminant during each compliance period starting with the initial compliance period.</p> <p>(NOTE: Systems serving more than 3300 persons that do not detect a contaminant in the initial compliance period may reduce sampling to two quarterly samples in 1 yr during each repeat compliance period.)</p> <p>(NOTE: Systems serving less than or equal to 3300 person that do not detect a contaminant in the initial compliance period may reduce sampling to one sample during each repeat compliance period.)</p> <p>Verify that, when an organic contaminant is detected (see Appendix D of this document), the system monitors quarterly at each sampling point that resulted in a detection.</p> <p>Verify that, if monitoring results in detection of one or more of aldicarb, aldicarb sulfone, aldicarb sulfoxide, heptchlor, and heptchlor epoxide, then subsequent monitoring analyzes for all related contaminants.</p> <p>(NOTE: The state may reduce the number of samples required and/or the frequency of sampling.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.80.7. Community systems are required to monitor for specific unregulated contaminants (40 CFR 141.35 and 141.40(a)(1), 141.40(a)(4) through 141.40(a)(7)).</p>	<p>(NOTE: The requirements outlined in this checklist item become effective January 1, 2001.)</p> <p>Verify that a wholesale or retail public water system that serves more than 10,000 persons, as determined by the state, and does not purchase their entire water supply from another public water system, monitors as follows:</p> <ul style="list-style-type: none"> – for the unregulated contaminants on Table 1 of Appendix E of this document – for the unregulated contaminants on Table 2 of Appendix E of this document if notified by the state or U.S. EPA that the system is part of the Screening Surveys – for the unregulated contaminants on Table 3 of Appendix E of this document if notified by the state or U.S. EPA that you are part of the Pre-Screen Testing <p>Verify that a wholesale or retail public water system that serves more than 10,000 persons, as determined by the state, and does purchase their entire water supply from another public water system, monitors as follows:</p> <ul style="list-style-type: none"> – for the unregulated contaminants on Table 1 of Appendix E of this document that have a “sampling location” indicated as “distribution system” – for the unregulated contaminants on Table 2 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if notified by the state or U.S. EPA that system is a part of the Screening Surveys – for the unregulated contaminants on Table 3 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if notified by the state or U.S. EPA that the system is a part of the Pre-Screen Testing. <p>Verify that, a water system that serves 10,000 or fewer persons that does not purchase their entire water supply from another public water system, monitors as follows:</p> <ul style="list-style-type: none"> – for the unregulated contaminants on Table 1 of Appendix E of this document if the system is notified by the state or U.S. EPA that they are part of the state Monitoring Plan for small systems – for the unregulated contaminants on Table 2 of Appendix E of this document if the system is notified by the state or U.S. EPA that they are part of the Screening Surveys – for the unregulated contaminants on Table 3 of Appendix E of this document if the system is notified by the state or U.S. EPA that they are part of the Pre-Screen Testing. <p>Verify that, a water system that serves 10,000 or fewer persons and purchases their entire water supply from a wholesale public water system, monitors as follows:</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<ul style="list-style-type: none"> - for the unregulated contaminants on Table 1 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if the system is notified by the state or U.S. EPA that they are part of the state Monitoring Plan for small systems - for the unregulated contaminants on Table 2 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if the system is notified by the state or U.S. EPA that they are part of the Screening Surveys - for the unregulated contaminants on Table 3 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if the system is notified by the state or U.S. EPA that they are part of the Pre-Screen Testing. <p>Verify that for Table 1, Appendix E of this document, monitoring is conducted as follows for all community water systems:</p> <ul style="list-style-type: none"> - collect samples of the listed contaminants according to the 40 CFR 141.40(a)(5) and appendix A of 40 CFR 141.40 and any other specific instructions provided by the state or U.S. EPA - analyze the additional parameters specified in Table 4 of Appendix E of this document, “Water Quality Parameters to be Monitored with UCMR Contaminants” for each relevant contaminant type - review the laboratory testing results to ensure reliability - report the results as specified in 40 CFR 141.35 (see checklist item DW.80.8). <p>Verify that, for large systems, arrangements are made for testing of the samples for each contaminant in Table 1 of Appendix E of this document according to the methods specified in appendix A of 40 CFR 141.40.</p> <p>Verify that, for small systems, unless directed otherwise by the state or U.S. EPA, the following are also done:</p> <ul style="list-style-type: none"> - properly receive, store, maintain and use the sampling equipment sent from the laboratory designated by U.S. EPA - sample at the times specified by the state or the U.S. EPA - collect and pack samples in accordance with the instructions sent by the laboratory designated by U.S. EPA - send the samples to the laboratory designated by U.S. EPA. <p>Verify that, unless the state or U.S. EPA informs the system of other sampling arrangements, all community water systems meet the following:</p> <ul style="list-style-type: none"> - if shipping the samples for testing, collect the samples early enough in the day to allow adequate time to send the samples for overnight delivery to the laboratory since some samples must be processed at the laboratory within 30

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>h of collection</p> <ul style="list-style-type: none"> -do not collect samples on Friday, Saturday or Sunday because sampling on these days would not allow samples to be shipped and received at the laboratory within 30 h -do not composite (that is, combine, mix or blend) the samples, collect, preserve and test each sample separately -after receiving the laboratory results, review and confirm the system information and data regarding sample collection and test results -report the results as provided in 40 CFR 141.35 (see checklist item DW.80.8). <p>Verify that large systems collect, analyze, and test samples according to the timeframes, frequencies, methodologies in Table 1 of Appendix E of this document.</p> <p>(NOTE: If a sample is not collected according to the specified procedures for a listed contaminant, resampling must be done within 14 days of observing the occurrence of the error (which may include notification from the laboratory that resample must be done) following the procedures specified for the method.)</p> <p>Verify that, unless otherwise directed by the state or U.S. EPA, small systems:</p> <ul style="list-style-type: none"> -collect samples at the times specified for you by the state or U.S. EPA, within one 12-mo period during the years indicated in Table 1, Appendix E of this document and according to the frequency in Table 5, Appendix E of this document -collect samples at the locations specified by the state or U.S. EPA. -report when a sample is not collected according to provided instructions -store and maintain the sample collection kits sent by U.S. EPA's designated laboratory in a secure place until used for sampling. -comply with the instructions sent by the state or U.S. EPA concerning the use of containers, collection (how to fill the sample bottle), dechlorination and/or preservation, and sealing and preparing the sample and shipping containers for shipment -comply with the instructions sent to you by U.S. EPA's designated laboratory concerning the handling of sample containers for specific contaminants -completely fill out the sampling forms -sign and date the sampling forms. -send the samples and the sampling forms to the laboratory designated in your instructions. <p>Verify that if the system is selected as an index system in the state Monitoring Plan, the system assists the state or U.S. EPA in identifying appropriate sampling locations and provides information on which wells and intakes are in use at the time of sampling, well casing and screen depths (if known) for those wells, and the pumping rate of each well or intake at the time of sampling.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>Verify that, if a large system is selected for the Screening Surveys or Pre-Screen Testing, the system:</p> <ul style="list-style-type: none"> – collects and arranges for testing of the contaminants in Table 2 and Table 3 of Appendix E of this document – sends the samples to one of the laboratories designated by U.S. EPA in the notification – report the test results to U.S. EPA, and provide a copy to the state, as specified in 40 CFR 141.35. <p>Verify that, if a small system is selected for the Screening Surveys or Pre-Screen Testing, the system collects samples in accordance with the instructions sent by the state or U.S. EPA, or, if informed by the state or U.S. EPA that the state or U.S. EPA will collect the sample, you must assist the state or U.S. EPA in identifying the appropriate sampling locations and in taking the samples.</p> <p>(NOTE: U.S. EPA will report the test results to you and the state.)</p>
<p>DW.80.8. The reporting of unregulated contaminant monitoring results must be done according to certain parameters by community water systems (40 CFR 141.35).</p>	<p>(NOTE: Community water systems serving a population of 10,000 or less are not required to report since U.S. EPA will arrange for testing and reporting of the results. However, the system will still need to comply with consumer confidence reporting and public notification requirements for these results.)</p> <p>Verify that the results of the unregulated contaminant monitoring (see checklist item DW.80.7) are provided to U.S. EPA and a copy to the state.</p> <p>Verify that results are reported within 30 days following the month in which the system received the results from the laboratory.</p> <p>(NOTE: U.S. EPA will place the data in the national drinking water contaminant occurrence database 60 days after the data is reported to allow for quality control review by systems and states.)</p> <p>Verify that the report includes information for each sample, and for each spiked sample and spike duplicate sample analyzed for quality control purposes and associated with each sample and its sample batch.</p> <p>(NOTE: See Appendix F of this document for details on the report content.)</p> <p>Verify that the information is reported in the electronic or other format specified by U.S. EPA.</p> <p>(NOTE: The laboratory to which samples were sent can report the results for the system as long as the laboratory sends the system a copy for review and</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>recordkeeping. However, the system is responsible for the reporting of the information and ensuring that the laboratory reports these results to U.S. EPA, with a copy to the state, on time.)</p> <p>(NOTE: Previously collected data can be reported for the unregulated contaminants as long as the data meets the requirements detailed in 40 CFR 141.40 (see checklist item DW.80.7.)</p>
<p>DW.80.9. Community water systems are required to monitor for total coliforms at a frequency based on the population served by the system (40 CFR 141.21(a)(2) and 141.21(a)(4)).</p>	<p>Verify that the community water system is sampling according to the sampling frequency in Appendix G of this document.</p> <p>Verify that samples are collected at regular time intervals throughout the month;</p> <p>(NOTE: A system which uses only groundwater (except groundwater under the direct influence of surface water) and serves 4900 persons or fewer may collect all required samples in a single day if they are taken from different sites.)</p>
<p>DW.80.10. Community water systems are required to monitor for radioactivity (40 CFR 141.25 and 141.26).</p>	<p>Verify that compliance for standards of gross alpha particle activity, radium-226, and radium-228 are based on an annual composite of four consecutive samples that are obtained at quarterly intervals or the average of the analyses of four samples obtained at quarterly intervals.</p> <p>(NOTE: A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis if the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence level of 95 percent.)</p> <p>Verify that when the gross alpha particle activity exceeds 5 pCi/L the same or an equivalent sample is analyzed for radium-226 and if the concentration of radium-226 exceeds 3 pCi/L, the same or equivalent sample is analyzed for radium-228.</p> <p>Verify that suppliers of water monitor for gross alpha particle activity, radium-226 and radium-228 every 4 yr and within 1 yr of the introduction of a new water source for a community water system.</p> <p>(NOTE: The state may order additional samples, waive required samples and impose additional requirements.)</p> <p>Verify that if the MCL for gross alpha particle activity or total radium is exceeded and the facility is the supplier of a community water system, the installation notifies the state and the public of the exceedance.</p> <p>Verify that systems using surface water sources and serving more than 100,000 persons are initially monitored quarterly for compliance with manmade radioactivity limitations and after the initial analysis, monitoring is done at least</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>every 4 yr.</p> <p>Verify that suppliers of any community water system using waters contaminated by nuclear facilities initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium.</p>
<p>DW.80.11. Community water systems that add a disinfectant to the water are required to analyze for TTHM (40 CFR 141.30).</p>	<p>(NOTE: The minimum number of samples that is required is based on the number of treatment plants used by the system.)</p> <p>Verify that community water systems serving a population of 10,000 or more individuals that add a disinfectant to the water and use surface water sources or only groundwater sources analyze for total TTHM on a quarterly basis on at least four samples.</p> <p>(NOTE: The state may reduce monitoring frequency.)</p> <p>(NOTE: These requirements apply to community water systems that are required to perform disinfection/filtration and that serve a population of 10,000 or more until January 1, 2002. The requirements also apply to community water systems that use only groundwater not under the direct influence of surface water that add a disinfectant (oxidant) in any part of the treatment process and serve a population of 10,000 or more until January 1, 2004. After January 1, 2004, this is no longer applicable.)</p>
<p>DW.80.12. Community public water systems are required to analyze for sodium (40 CFR 141.41).</p>	<p>Verify that one sample is taken per plant at the entry point of the distribution system annually for systems using surface water in whole or in part and every 3 yr for systems using solely groundwater sources.</p> <p>Verify that the results of the sampling were reported to the U.S. EPA and/or state within 10 days following the end of the required monitoring period or within the first 10 days of the month following the month in which the sample was taken.</p>
<p>DW.80.13. Community water systems are required to identify whether certain construction materials are present in their distribution system and report to the state (40 CFR 141.42(d)).</p>	<p>Verify that the community water supply system identifies whether the following construction materials are present in their distribution system and reports to the state:</p> <ul style="list-style-type: none"> – lead from piping, solder, caulking, interior lining of distribution mains, alloys, and home plumbing – copper from piping and alloys, service lines, and home plumbing – galvanized piping, service lines, and home plumbing – ferrous piping materials such as cast iron and steel – asbestos cement pipe. <p>(NOTE: States may require identification and reporting of other materials.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.80.14. Community water systems that add a chemical disinfectant to the water in any part of the drinking water process or supply water containing a chemical disinfectant are required to meet specific monitoring requirements for disinfection byproducts and disinfection byproduct precursors (DBPP).(40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), 141.132(b), and 141.132(d)).</p>	<p>(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning January 1, 2004.)</p> <p>Verify that all samples are taken during normal operating conditions and according to the required monitoring plan.</p> <p>(NOTE: Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, if the state approves.)</p> <p>Verify that monitoring for TTHM and HAA5 is done at the frequency, either routine or reduced as appropriate, outlined in Appendix L of this document.</p> <p>Verify that sample analysis is done using appropriate methodology.</p> <p>Verify that for systems on a reduced monitoring schedule, the average of all samples taken in the year (for systems that must monitor quarterly) or the result of the sample (for systems that must monitor no more frequently than annually) is no more than 0.060 mg/L for TTHMs and 0.045 mg/L HAA5.</p> <p>Verify that, if the required averages for systems on a reduced monitoring schedule are not met, the system returns to routine monitoring in the quarter immediately following the quarter in which the system exceeded the required averages.</p> <p>(NOTE: The state may return a system to routine monitoring at the state's discretion.)</p> <p>Verify that community water systems using chlorine dioxide, for disinfection or oxidation, perform the following monitoring:</p> <ul style="list-style-type: none"> – daily samples at the entrance to the distribution system plus, when the daily sample exceeds the chlorite MCL, three additional samples in the distribution system the following day at the entrance to the distribution system, as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible – a monthly three-sample set in the distribution system near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. <p>Verify that daily chlorite monitoring at the entrance to the distribution system is not reduced.</p> <p>(NOTE: Monthly chlorite monitoring in the distribution system may be reduced to one three-sample set per quarter after 1 yr of monitoring where no individual</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>chlorite sample taken in the distribution system exceeds the chlorite MCL and the system has not been required to conduct additional monitoring in response to a exceedance in the daily samples. The system may remain on the reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system exceeds the chlorite MCL or the system is required to conduct additional monitoring in response to a exceedance in the daily samples.)</p> <p>Verify that systems using ozone, for disinfection or oxidation, take one sample per month for each treatment plant in the system using ozone at the entrance to the distribution system, while the ozonation system is operating under normal conditions.</p> <p>(NOTE: Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is < 0.05 mg/L based upon representative monthly bromide measurements for 1 yr. The system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is \geq 0.05 mg/L based upon representative monthly measurements. If the running annual average source water bromide concentration is \geq 0.05 mg/L, the system must resume routine monitoring.)</p> <p>Verify that Subpart H systems that use conventional filtration treatment monitor for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water.</p> <p>Verify that all systems using conventional filtration also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water.</p> <p>(NOTE: These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, all systems must monitor for alkalinity in the source water prior to any treatment. Systems must take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.)</p> <p>(NOTE: Subpart H systems with an average treated water TOC of less than 2.0 mg/L for 2 consecutive years, or less than 1.0 mg/L for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The system must revert to routine monitoring in the month following the quarter when the annual average treated water TOC \geq 2.0 mg/L.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.80.15. Community water systems that add a chemical disinfectant to the water in any part of the drinking water process or distribute supply water containing a chemical disinfectant are required to meet specific monitoring requirements for disinfection residuals (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a)(1), and 141.132(c)).</p>	<p>(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning January 1, 2004.)</p> <p>Verify that all samples are taken during normal operating conditions and according to the required monitoring plan.</p> <p>Verify that sample analysis is done using appropriate methodology.</p> <p>Verify that systems using chlorine and/or chloramines measure the residual disinfectant level at the same points in the distribution system and at the same time as total coliforms are sampled.</p> <p>(NOTE: Subpart H systems may use the results of residual disinfectant concentration sampling conducted under 40 CFR 141.74(b)(6)(i) for unfiltered systems or 40 CFR 141.74(c)(3)(i) for systems that filter, in lieu of taking separate samples.)</p> <p>Verify that monitoring is not reduced when using chlorine and/or chloramine.</p> <p>Verify that systems using chlorine dioxide for disinfection or oxidation take daily samples at the entrance to the distribution system.</p> <p>(NOTE: When a daily chlorine dioxide sample exceeds the MRDL, samples are required to be taken in the distribution system the following day at the entrance to the distribution system plus three additional chlorine dioxide distribution samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system (i.e., no booster chlorination), the system must take three samples as close to the first customer as possible, at intervals of at least 6 h. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the system must take one sample as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible.)</p> <p>Verify that monitoring is not reduced when using chlorine dioxide.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.80.16. Community water systems that add a chemical disinfectant to the water in any part of the drinking water process are required to have a monitoring plan (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), and 141.132(f)).</p>	<p>(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning January 1, 2004.)</p> <p>Verify that the system has developed and maintains a monitoring plan.</p> <p>(NOTE: The plan must be made available for inspection by the state and the general public no later than 30 days following applicable compliance dates.)</p> <p>Verify that all Subpart H systems serving more then 3300 people submit a copy of the plan to the state .</p> <p>Verify that the plan includes, at a minimum:</p> <ul style="list-style-type: none"> - specific locations and schedules for collecting samples for any required parameters - how the system will calculate compliance with MCLs, MRDLs, and treatment techniques - if approved for monitoring as a consecutive system, or as providing water to a consecutive system, the plan reflects the entire distribution system.

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
COMMUNITY WATER SYSTEMS DW.90 Notifications	(NOTE: A community water system is a public water system that serves at least 25 people year round in their primary residences. Community water systems must also comply with the standards for public water systems (see DW.10.1 through DW.50.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)
DW.90.1. Community water systems that exceed the secondary MCL of 2.0 mg/L for fluoride but not the MCL of 4.0 mg/L are required to notify specific individuals (40 CFR 143.5).	Verify that notice, including the required language, has been provided to the following: <ul style="list-style-type: none"> – all billing units annually – all new billing units at the time service begins – the state public health officer. (NOTE: A copy of the text of the notice is found in 40 CFR 143.5(b).)
DW.90.2. Community water systems are required to deliver to their customers annual consumer confidence reports (40 CFR 141.151 through 141.155).	Verify that the community water system delivers annual consumer confidence reports to their customers by July 1 of each year. Verify that the reports must contain information on the quality of the water delivered by the systems and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner. Verify that one copy is delivered to each customer and the reports are made available to the public upon request. Verify that, no later than the date the system is required to distribute the report to its customers, each community water system mails a copy of the report to the primacy agency, followed within 3 mo by a certification that the report has been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the primacy agency. Verify that, no later than the date the system is required to distribute the report to its customers, each community water system delivers the report to any other agency or clearinghouse identified by the primacy agency. Verify that each community water system serving 100,000 or more persons posts its current year's report to a publicly-accessible site on the Internet. Verify that the community water system keeps copies of the report for no less than 5 yr. (NOTE: See Appendix H of this document for information on the contents of the report.)

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>(NOTE: Each existing community water system must deliver its first report by October 19, 1999, its second report by July 1, 2000, and subsequent reports by July 1 annually thereafter. The first report must contain data collected during, or prior to, calendar year 1998. Each report thereafter must contain data collected during, or prior to, the previous calendar year. A new community water system must deliver its first report by July 1 of the year after its first full calendar year in operation and annually thereafter. A community water system that sells water to another community water system must deliver the applicable required information to the buyer system: no later than April 19, 1999, by April 1, 2000, and by April 1 annually thereafter; or on a date mutually agreed upon by the seller and the purchaser, and specifically included in a contract between the parties.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>COMMUNITY WATER SYSTEMS</p> <p>DW.100 Lead and Copper</p>	<p>(NOTE: A community water system is a public water system that serves at least 25 people year round in their primary residences. Community water systems must also comply with the standards for public water systems (see DW.10.1 through DW.50.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.100.1. Monitoring for lead and copper is required to start on a specified date and be done at a specified number of sites (see the chart in Appendix I of this document (40 CFR 141.80(h), 141.86(a) through 141.86(d)).</p>	<p>Verify that sample sites have been selected and sampling started as of the dates indicated in Appendix I of this document.</p> <p>Verify that monitoring is done according to the schedules outlined in 40 CFR 141.86 and as required by the state.</p> <p>Verify that the procedures for sampling and granting of variances found in 40 CFR 141.86 are followed.</p> <p>Verify that selected sampling sites (tier 1 sampling sites) consist of single family structures that have one or both of the following:</p> <ul style="list-style-type: none"> – contain copper pipes with lead solder installed after 1982 or contain lead pipes – are served by a lead service line. <p>(NOTE: When multiple family residences comprise at least 20 percent of the structure served by a water system, the system may include these types of structures in its sampling pool.)</p> <p>Verify that if there is insufficient tier 1 sampling sites, the sampling pool is completed with tier 2 sites that consist of buildings, including multiple family residences, that contain copper pipes with lead solder installed after 1982 or contain lead pipes; and/or are served by a lead service line.</p> <p>Verify that if there are insufficient tier 1 and tier 2 sites, the sample is completed with tier 3 sites consisting of single family structures that contain copper pipes with lead solder installed before 1983.</p> <p>Verify that for initial tap sampling, all large water systems monitor for two consecutive 6 mo periods and all small and medium-size water systems monitor during each 6 mo period until:</p> <ul style="list-style-type: none"> – the system exceeds the lead or copper action levels and is then required to implement corrosion control treatment – the system meets the lead and copper action levels during two consecutive 6-mo monitoring periods. <p>(NOTE: A small or medium-sized water system that meets the lead and copper action levels during each of two consecutive 6-mo monitoring periods can reduce</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>the number of sampling sites and the frequency of sampling to once a year. If action levels are met during 3 consecutive years of monitoring, the frequency may be reduced to once every 3 yr.)</p> <p>Verify that, after the installation of corrosion by January 1, 1997, large systems conduct follow-up tap monitoring during two consecutive 6 mo periods by January 1, 1998.</p> <p>Verify that, after the installation of corrosion control within 24 mo after being required to do so by the state, small and medium systems conduct follow-up monitoring for two consecutive 6- mo periods within 36 mo after being required to install optimal corrosion control treatment.</p> <p>Verify that after the state has designates water quality parameter values for optimal corrosion control, large systems monitor at entry points bi-weekly and within the distribution system every 6 mo.</p> <p>(NOTE: After the state has designated water quality parameter values for optimal corrosion control, small and medium systems are required to conduct monitoring only when they exceed the lead or copper action level.)</p> <p>Verify that, for all size systems, the first monitoring period for water quality parameters began on the date the regulatory agency specifies the optimal value.</p>
<p>DW.100.2. Community water systems are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (40 CFR 141.80(a)(1) and 141.80(c)).</p>	<p>Verify that the concentration of lead does not exceed 0.015 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p> <p>Verify that the concentration of copper does not exceed 1.3 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p>
<p>DW.100.3. In reference to lead and copper in water systems, all water systems are required to fulfill specific reporting requirements (40 CFR 141.90).</p>	<p>Verify that water systems report sampling results for all tap water samples within the first 10 days following the end of each monitoring period.</p> <p>Verify that water systems report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period.</p> <p>Verify that the following reports are submitted as applicable:</p> <ul style="list-style-type: none"> – corrosion control treatment – source water treatment

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<ul style="list-style-type: none"> – lead service line replacement – demonstration of public education program.
<p>DW.100.4. Community water systems must educate their users about lead in drinking water systems (40 CFR 141.85 and 141.90(f)).</p>	<p>Verify that public education materials are distributed in the following manner when a water system exceeds the lead action level based on tap water samples:</p> <ul style="list-style-type: none"> – the material is in the appropriate languages where languages other than English are spoken by a significant proportion of the population – within 60 days after exceeding the lead action level: <ul style="list-style-type: none"> – notices are insert in each customer’s water utility bill – information is provided to the editorial departments of the major daily and weekly newspapers circulated in the community – pamphlets or brochures are delivered to pertinent facilities, organizations, schools and medical centers – public service announcements are submitted to at least five of the radio and television stations broadcasting to the community. <p>Verify that the notification tasks are repeated every 6 mo for as long as a community water system exceeds the lead action level.</p> <p>(NOTE: The text of written materials and broadcast materials can be found in 40 CFR 141.85(a) and 141.85(b).)</p> <p>Verify that by December 31st of each year, any water system that has had to issue public education materials submits a letter to the state indicating that the system has delivered the public education materials as required each year that the levels are exceeded.</p>
<p>DW.100.5. Water systems that fail to meet the lead or copper action levels are required to meet specific monitoring requirements (40 CFR 141.80(h) and 141.88).</p>	<p>Verify that systems that exceed lead or copper action levels at the tap collect one source water sample from each entry point to the distribution system within 6 mo after the exceedance.</p> <p>Verify that systems which install source water treatment as required by the state collects an additional source water sample from each entry point to the distribution system during two consecutive 6-mo monitoring periods.</p> <p>Verify that the system monitors as follows when the state specifies maximum permissible source water levels:</p> <ul style="list-style-type: none"> – once during the 3-yr compliance period for water systems using only groundwater – annually for water systems using surface water or a combination of surface and groundwater.

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	(NOTE: Frequency of monitoring may be reduced by the state upon request.)
DW.100.6. All large water systems and all small and medium size systems that exceed the lead or copper action level are required to monitor for water quality parameters in addition to lead and copper at the taps (40 CFR 141.80(h) and 141.87).	Verify that monitoring for water quality parameters is done according to the requirements outlined in Appendix J of this document.
DW.100.7. Systems that exceed the lead or copper action level after corrosion control is installed are required to implement applicable source water treatment standards (40 CFR 141.80(e) and 141.83).	<p>Verify that systems exceeding the lead or copper action level do lead and copper source water monitoring and make a treatment recommendation to the state within 6 mo after exceeding the lead or copper action level.</p> <p>Verify that if the state requires the installation of source water treatment, the installation is done within 24 mo after the states initial response.</p> <p>Verify that follow-up tap water monitoring and source water monitoring is completed within 36 mo after the state’s initial response.</p>
DW.100.8. Community water systems are required to install and operate optimal corrosion control (40 CFR 141.80(d) and 141.82).	<p>Verify that the water system has corrosion control that minimizes the lead and copper concentrations at users’ taps while insuring that the treatment does not cause the water system to violate any of the national primary drinking water standards.</p> <p>(NOTE: Please see 40 CFR 141.81 for design details for corrosion control systems in relationship to the size of the water system.)</p>
DW.100.9. Community water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines (40 CFR 141.80(f) and 141.84).	<p>Verify that lead service line replacement, if required, is done according to the schedules and parameters outlined in 40 CFR 141.84.</p> <p>(NOTE: A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line is less than or equal to 0.015 mg/L.)</p> <p>(NOTE: Replacement of lead service lines can stop when the first draw samples that are collected meet the lead action levels during two consecutive monitoring periods and the system submits the results to the state.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
DW.100.10. All systems subject to the lead and copper requirements are required to retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80(j) and 141.91).	Verify that records are kept onsite for 12 yr.

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>NONCOMMUNITY WATER SYSTEMS</p> <p>DW.120 Standards</p>	<p>(NOTE: A noncommunity water system can be either a nontransient noncommunity (NTNC) water system or a transient non-community water system. Noncommunity water systems must also comply with the standards for public water systems (see DW.10.1 through DW.50.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.120.1. Noncommunity water systems, must not exceed a MCL for nitrate of 10 mg/L (40 CFR 141.11(d) and 141.62(b)).</p>	<p>Verify that the nitrate level at noncommunity water systems does not exceed 10 mg/ L.</p> <p>Verify that the Nitrite level at noncommunity water systems does not exceed 1 mg/L.</p> <p>Verify that the total nitrate and nitrite levels at noncommunity water systems do not exceed 10 mg/L.</p> <p>(NOTE: At the discretion of the state, nitrate levels not to exceed 20 mg/L may be allowed in a noncommunity system if the supplier of the water demonstrates to the satisfaction of the state that:</p> <ul style="list-style-type: none"> – such water will not be available to children under 6 mo of age – there will be continuous posting of the fact that nitrate levels exceed 10 mg/L and the potential health effects of exposure – local and state public health officials are notified annually of nitrate levels that exceed 10 mg/L – no adverse health effects result.)

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>NONCOMMUNITY WATER SYSTEMS</p> <p>DW.130 Monitoring/Sampling</p>	<p>(NOTE: A noncommunity water system can be either a nontransient noncommunity (NTNC) water system or a transient non-community water system. Noncommunity water systems must also comply with the standards for public water systems (see DW.10.1 through DW.50.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.130.1. Noncommunity water systems are required to monitor for total coliforms according to a specific schedule (40 CFR 141.21(a)(3)).</p>	<p>Verify that the noncommunity water systems using only groundwater (except groundwater under the direct influence of surface water) and serving 1000 persons or less, monitors each calendar quarter the system provides water to the public.</p> <p>Verify that the following noncommunity water systems are monitoring for total coliforms according to the schedule outlined in Appendix G of this document:</p> <ul style="list-style-type: none"> – systems using only groundwater (except groundwater under the direct influence of surface water) and serving more than 1000 persons during any month – systems using surface water, in total or in part – systems using groundwater under the direct influence of surface water.
<p>DW.130.2. Noncommunity water systems that add a chemical disinfectant to the water in any part of the drinking water process or supply water containing chemical disinfectant, are required to meet specific monitoring requirements for disinfection byproducts and disinfection byproduct precursors (DBPP).(40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), 141.132(b)(1), and 141.132(d)).</p>	<p>(NOTE: This requirement applies to Subpart H systems serving 10,000 or more persons beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning January 1, 2004.)</p> <p>Verify that all samples are taken during normal operating conditions and based on the required monitoring plan.</p> <p>(NOTE: Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required if the state approves.)</p> <p>Verify that monitoring for TTHM and HAA5 is done at the frequency, either routine or reduced as appropriate, outlined in Appendix L of this document.</p> <p>Verify that sample analysis is done using appropriate methodology.</p> <p>Verify that for systems on a reduced monitoring schedule, the average of all samples taken in the year (for systems that must monitor quarterly) or the result of the sample (for systems that must monitor no more frequently than annually) is no more than 0.060 mg/L for TTHMs and 0.045 mg/L HAA5.</p> <p>Verify that, if the required averages for systems on a reduced monitoring schedule are not met, the system returns to routine monitoring in the quarter immediately</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>following the quarter in which the system exceeded the required averages.</p> <p>(NOTE: The state may return a system to routine monitoring at the state's discretion.)</p> <p>Verify that Subpart H systems that use conventional filtration treatment monitor for TOC no later than the point of combined filter effluent turbidity monitoring and representative of the treated water.</p> <p>Verify that all systems using conventional filtration also monitor for TOC in the source water prior to any treatment at the same time as monitoring for TOC in the treated water.</p> <p>(NOTE: These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, all systems must monitor for alkalinity in the source water prior to any treatment. Systems must take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.)</p> <p>(NOTE: Subpart H systems with an average treated water TOC of less than 2.0 mg/L for 2 consecutive years, or less than 1.0 mg/L for 1 yr, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The system must revert to routine monitoring in the month following the quarter when the annual average treated water TOC \geq 2.0 mg/L.)</p>
<p>DW.130.3. Noncommunity water systems that add a chemical disinfectant to the water in any part of the drinking water process or supply water containing a chemical disinfectant are required to meet specific monitoring requirements for disinfection residuals (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), and 141.132(c)).</p>	<p>(NOTE: This requirement applies to Subpart H systems serving 10,000 or more persons beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning January 1, 2004.)</p> <p>Verify that all samples are taken during normal operating conditions.</p> <p>(NOTE: Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required if the state approves.)</p> <p>Verify that sample analysis is done using appropriate methodology.</p> <p>Verify that systems using chlorine and/or chloramines measure the residual disinfectant level at the same points in the distribution system and at the same time as total coliforms are sampled.</p> <p>(NOTE: Subpart H systems may use the results of residual disinfectant concentration sampling conducted under 40 CFR 141.74(b)(6)(i) for unfiltered systems or 40 CFR 141.74(c)(3)(i) for systems which filter, in lieu of taking</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>separate samples.)</p> <p>Verify that monitoring is not reduced when using chlorine and/or chloramine.</p> <p>Verify that systems using chlorine dioxide for disinfection or oxidation take daily samples at the entrance to the distribution system.</p> <p>(NOTE: When a daily sample exceeds the MRDL, samples are required to be taken in the distribution system the following day at the entrance to the distribution system plus three additional chlorine dioxide distribution samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system (i.e., no booster chlorination), the system must take three samples as close to the first customer as possible, at intervals of at least 6 h. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the system must take one sample as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible.)</p> <p>Verify that monitoring is not reduced when using chlorine dioxide.</p>
<p>DW.130.4. Noncommunity water systems that add a chemical disinfectant to the water in any part of the drinking water process are required to have a monitoring plan (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), and 141.132(f)).</p>	<p>(NOTE: This requirement applies to Subpart H systems serving 10,000 or more persons beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning January 1, 2004.)</p> <p>Verify that the system has developed and maintains a monitoring plan.</p> <p>(NOTE: The plan must be made available for inspection by the state and the general public no later than 30 days following applicable compliance dates.)</p> <p>Verify that all Subpart H systems serving more than 3,300 people submit a copy of the plan to the state.</p> <p>Verify that the plan includes, at a minimum:</p> <ul style="list-style-type: none"> – specific locations and schedules for collecting samples for any required parameters – how the system will calculate compliance with MCLs, MRDLs, and treatment techniques – if approved for monitoring as a consecutive system, or as providing water to a consecutive system, the plan reflects the entire distribution system.

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>NONTRANSIENT NONCOMMUNITY (NTNC) WATER SYSTEMS</p> <p>DW.150</p> <p>Standards</p>	<p>(NOTE: A nontransient noncommunity water system serves at least 25 of the same persons for more than six months in a year. Nontransient noncommunity water systems must also comply with the standards for public water systems (see checklist items DW.10.1 through DW.50.5) and a noncommunity water system (see checklist items DW.120.1 through DW.130.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.150.1 NTNC water systems are required to meet specific MCLs for organic contaminants, inorganic contaminants, and microbiological contaminants (40 CFR 141.60 through 141.63).</p>	<p>Verify that the standards outlined in Appendix A and Appendix B of this document are met.</p> <p>Verify that systems, which collect at least 40 bacteriological samples per month, have no more than 5 percent of the samples collected during a month that are total coliform-positive.</p> <p>Verify that systems, which collect less than 40 bacteriological samples per month, have no more than one sample collected per month that is total coliform-positive.</p> <p>Verify that there are no fecal coliform-positive repeat sampling or <i>E. coli</i>-positive repeat samples, or any total coliform-positive repeat samples following a fecal coliform-positive or <i>E. coli</i>-positive routine sample.</p>
<p>DW.150.2. NTNC water systems are required to meet specific MCLs and MRDLs related to disinfection (40 CFR 141.64 and 141.65).</p>	<p>Verify that NTNC water systems meet the MCL for disinfection byproducts and the MRDLs outlined in Appendix K of this document.</p> <p>(NOTE: This requirements applies to Subpart H systems serving 10,000 or more persons beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning January 1, 2004.)</p> <p>(NOTE: A system that is installing GAC or membrane technology to comply with MCL requirements may apply to the state for an extension of up to 24 mo past the compliance dates, but not beyond January 1, 2004. In granting the extension, states must set a schedule for compliance and may specify any interim measures that the system must take. Failure to meet the schedule or interim treatment requirements constitutes a violation of a National Primary Drinking Water Regulation.)</p>

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>NONTRANSIENT NONCOMMUNITY (NTNC) WATER SYSTEMS</p> <p>DW.160 Monitoring/Sampling</p>	<p>(NOTE: A nontransient noncommunity water system serves at least 25 of the same persons for more than six months in a year. Nontransient noncommunity water systems must also comply with the standards for public water systems (see checklist items DW.10.1 through DW.50.5) and a noncommunity water system (see checklist items DW.120.1 through DW.130.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.160.1. NTNC water systems are required to meet monitoring requirements for inorganic contaminants (40 CFR 141.23(a)).</p>	<p>Verify that groundwater systems:</p> <ul style="list-style-type: none"> – take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (a sampling point) beginning in the compliance period starting January 1, 1993 – take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. <p>Verify that surface water systems:</p> <ul style="list-style-type: none"> – 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 that is representative of each source after treatment (a sampling point) beginning in the compliance period starting January 1, 1993 – takes each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. <p>(NOTE: In relation to these requirements, surface water systems include systems with a combination of surface and ground sources.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>(NOTE: The state may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed if the detection limit of the method used for analysis is less than one fifth the MCL and compositing is done in a laboratory.)</p> <p>Verify that, if the concentration in a composite sample is greater than or equal to one- fifth of the MCL of any inorganic chemical, a followup sample is analyzed within 14 days from each sampling point included in the composite and analyzed for the contaminants which exceeded one fifth of the MCL in the composite sample.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>(NOTE: Detection limits for each analytical methods and MCLs for each inorganic contaminant are listed in Appendix C of this document.)</p> <p>Verify that, for groundwater systems, inorganic monitoring is repeated at least once every compliance period (every 3 yr), and samples are taken quarterly for at least two quarters if a MCL is violated.</p> <p>Verify that, for surface water systems, inorganic sampling is repeated annually and samples are taken quarterly for at least four quarters if an MCL is violated.</p> <p>(NOTE: The state may issue a waiver reducing the required monitoring.)</p>
<p>DW.160.2. NTNC water systems are required to meet specific monitoring requirements for asbestos (40 CFR 141.23(b)).</p>	<p>Verify that asbestos is monitored during the first 3 yr compliance period of each 9 yr compliance cycle starting January 1, 1993.</p> <p>(NOTE: The facility may apply to the state for a waiver of monitoring if they believe that asbestos is not an issue.)</p> <p>Verify that, if the system is vulnerable to asbestos contamination only because of corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.</p> <p>Verify that, if the system is vulnerable to asbestos contamination due to both its source water supply and corrosion of asbestos-cement pipe, one sample is taken at a tap served by asbestos-cement pipe and under conditions where contamination is most likely to occur.</p> <p>Verify that, when the MCL is exceeded, monitoring is done quarterly.</p>
<p>DW.160.3. NTNC water systems are required to meet specific monitoring requirements for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, and thallium (40 CFR 141.23(c)).</p>	<p>Verify that monitoring is done as follows:</p> <ul style="list-style-type: none"> – groundwater systems: take one sample at each sampling point during each compliance period – surface water systems (or combined surface/ground): take one sample annually at each sampling point – when MCLs are exceeded, monitoring is done quarterly. <p>(NOTE: States may grant a public water system a waiver for the monitoring of cyanide.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.160.4. NTNC water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) and 141.23(e)).</p>	<p>Verify that the following schedules are met for monitoring of nitrate:</p> <ul style="list-style-type: none"> – NTNC water systems served by groundwater monitor annually starting January 1, 1993 – NTNC water systems served by surface water monitor quarterly starting January 1, 1993. <p>(NOTE: States may allow a surface water system to reduce annual sampling frequency if analytical results from four consecutive quarters are less than 50 percent of the MCL.)</p> <p>Verify that NTNC water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL.</p> <p>(NOTE: States may allow groundwater systems to return to annual sampling if the results of four consecutive quarters are consistently and reliably below the MCL.)</p> <p>(NOTE: After the initial round of quarterly sampling is completed, each NTNC system which is monitoring annually shall take the subsequent samples during the quarters which previously resulted in the highest analytical result.)</p> <p>Verify that NTNC water systems take one sample at each sampling point in the compliance period beginning January 1, 1993 and ending December 31, 1995 for nitrite.</p> <p>(NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.)</p> <p>Verify that NTNC systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL.</p> <p>Verify that systems which are monitoring annually for nitrites take each subsequent sample during the quarters which previously resulted in the highest analytical result.</p> <p>Verify that, when nitrate or nitrite samples indicate an exceedence of the MCL, a confirmation sample is taken within 24 h of receipt of the results.</p> <p>(NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedence and take a confirmation sample within two weeks.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.160.5. Beginning with the initial compliance period, monitoring of certain contaminants at NTNC water systems (see Table 2 of Appendix A of this document) is required to be done according to specific parameters (40 CFR 141.24(f)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point of the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or combined surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each NTNC water system takes four consecutive quarterly samples for each contaminant, except vinyl chlorides.</p> <p>(NOTE: If the initial monitoring for contaminants is completed by December 1992 and none of the contaminants listed are found, then each system shall take one sample annually starting with the initial compliance period.)</p> <p>(NOTE: After a minimum of 3 yr of sampling, the state may reduce the number of samples to one each compliance period.)</p> <p>Verify that, if a contaminant, except vinyl chloride, is detected at a level exceeding 0.0005 mg/L in any sample, the system monitors quarterly at each sampling point which resulted in a detection.</p> <p>Verify that groundwater systems which have detected one or more of the following two-carbon organic compounds; trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene monitor quarterly for vinyl chlorides at each sampling point at which one or more of the two-carbon organic compounds was detected.</p> <p>Verify that, when the MCLs are exceeded, monitoring is conducted quarterly until the state determines that the system is reliably and consistently below the MCL.</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.160.6. Monitoring for organic contaminants at NTNC water systems (see Table 3 of Appendix A of this document) is required to be done according to specific parameters (40 CFR 141.24(h)).</p>	<p>Verify that groundwater systems take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment.</p> <p>Verify that surface water systems (or surface/ground) take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment.</p> <p>(NOTE: For both groundwater and surface water systems, each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.)</p> <p>Verify that, if the system draws water from more than one source and the sources are combined before distribution, the system samples at an entry point to the distribution system during periods of normal operating conditions.</p> <p>Verify that each NTNC water system takes four consecutive quarterly samples for each contaminant during each compliance period starting with the initial compliance period.</p> <p>(NOTE: Systems serving more than 3300 persons, that do not detect a contaminant in the initial compliance period, may reduce sampling to two quarterly samples in 1 yr during each repeat compliance period.)</p> <p>(NOTE: Systems serving less than or equal to 3300 persons, that do not detect a contaminant in the initial compliance period, may reduce sampling to one sample during each repeat compliance period.)</p> <p>Verify that, when an organic contaminant is detected (see Appendix D of this document), the system monitors quarterly at each sampling point that resulted in a detection.</p> <p>Verify that, if monitoring results in detection of one or more of aldicarb, aldicarb sulfone, aldicarb sulfoxide, and heptchlor, heptchlor epoxide, then subsequent monitoring analyzes for all related contaminants.</p> <p>(NOTE: The state may reduce the number of samples required and/or the frequency of sampling.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.160.7. NTNC systems are required to monitor for specific unregulated contaminants (40 CFR 141.35 and 141.40(a)(1), 141.40(a)(4) through 141.40(a)(7)).</p>	<p>(NOTE: The requirements outlined in this checklist item become effective January 1, 2001.)</p> <p>Verify that a wholesale or retail public water system that serves more than 10,000 persons, as determined by the state, and does not purchase their entire water supply from another public water system, monitors as follows:</p> <ul style="list-style-type: none"> – for the unregulated contaminants on Table 1 of Appendix E of this document – for the unregulated contaminants on Table 2 of Appendix E of this document if notified by the state or U.S. EPA that the system is part of the Screening Surveys – for the unregulated contaminants on Table 3 of Appendix E of this document if notified by the state or U.S. EPA that you are part of the Pre-Screen Testing <p>Verify that a wholesale or retail public water system that serves more than 10,000 persons, as determined by the state, and does purchase their entire water supply from another public water system, monitors as follows:</p> <ul style="list-style-type: none"> – for the unregulated contaminants on Table 1 of Appendix E of this document that have a “sampling location” indicated as “distribution system” – for the unregulated contaminants on Table 2 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if notified by the state or U.S. EPA that system is a part of the Screening Surveys – for the unregulated contaminants on Table 3 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if notified by the state or U.S. EPA that the system is a part of the Pre-Screen Testing. <p>Verify that, a water system that serves 10,000 or fewer persons that does not purchase their entire water supply from another public water system, monitors as follows:</p> <ul style="list-style-type: none"> – for the unregulated contaminants on Table 1 of Appendix E of this document if the system is notified by the state or U.S. EPA that they are part of the State Monitoring Plan for small systems – for the unregulated contaminants on Table 2 of Appendix E of this document if the system is notified by the state or U.S. EPA that they are part of the Screening Surveys – for the unregulated contaminants on Table 3 of Appendix E of this document if the system is notified by the state or U.S. EPA that they are part of the Pre-Screen Testing. <p>Verify that, a water system that serves 10,000 or fewer persons and purchases their entire water supply from a wholesale public water system, monitors as follows:</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<ul style="list-style-type: none"> - for the unregulated contaminants on Table 1 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if the system is notified by the state or U.S. EPA that they are part of the State Monitoring Plan for small systems - for the unregulated contaminants on Table 2 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if the system is notified by the state or U.S. EPA that they are part of the Screening Surveys - for the unregulated contaminants on Table 3 of Appendix E of this document that have a “sampling location” indicated as “distribution system” if the system is notified by the state or U.S. EPA that they are part of the Pre-Screen Testing. <p>Verify that for Table 1, Appendix E of this document, monitoring is conducted as follows for all NTNC water systems:</p> <ul style="list-style-type: none"> - collect samples of the listed contaminants according to the 40 CFR 141.40(a)(5) and appendix A of 40 CFR 141.40 and any other specific instructions provided by the state or U.S. EPA - analyze the additional parameters specified in Table 4 of Appendix E of this document, “Water Quality Parameters to be Monitored with UCMR Contaminants” for each relevant contaminant type - review the laboratory testing results to ensure reliability - report the results as specified in 40 CFR 141.35 (see checklist item ?). <p>Verify that, for large systems, arrangements are made for testing of the samples for each contaminant in Table 1 of Appendix E of this document according to the methods specified in appendix A of 40 CFR 141.40.</p> <p>Verify that, for small systems, unless directed otherwise by the state or U.S. EPA, the following are also done:</p> <ul style="list-style-type: none"> - properly receive, store, maintain and use the sampling equipment sent from the laboratory designated by U.S. EPA - sample at the times specified by the state or the U.S. EPA - collect and pack samples in accordance with the instructions sent by the laboratory designated by U.S. EPA - send the samples to the laboratory designated by U.S. EPA. <p>Verify that, unless the state or U.S. EPA informs the system of other sampling arrangements, all NTNC water systems meet the following:</p> <ul style="list-style-type: none"> - if shipping the samples for testing, collect the samples early enough in the day to allow adequate time to send the samples for overnight delivery to the laboratory since some samples must be processed at the laboratory within 30 h of collection

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<ul style="list-style-type: none"> - do not collect samples on Friday, Saturday or Sunday because sampling on these days would not allow samples to be shipped and received at the laboratory within 30 h - do not composite (that is, combine, mix or blend) the samples, collect, preserve and test each sample separately - after receiving the laboratory results, review and confirm the system information and data regarding sample collection and test results - report the results as provided in 40 CFR 141.35. <p>Verify that large systems collect, analyze, and test samples according to the timeframes, frequencies, methodologies in Table 1 of Appendix E of this document.</p> <p>(NOTE: If a sample is not collected according to the specified procedures for a listed contaminant, resampling must be done within 14 days of observing the occurrence of the error (which may include notification from the laboratory that resample must be done) following the procedures specified for the method.)</p> <p>Verify that, unless otherwise directed by the state or U.S. EPA, small systems:</p> <ul style="list-style-type: none"> - collect samples at the times specified for you by the state or U.S. EPA, within one 12-mo period during the years indicated in Table 1, Appendix E of this document and according to the frequency in Table 5, Appendix E of this document - collect samples at the locations specified by the state or U.S. EPA. - report when a sample is not collected according to provided instructions - store and maintain the sample collection kits sent by U.S. EPA's designated laboratory in a secure place until used for sampling. - comply with the instructions sent by the state or U.S. EPA concerning the use of containers, collection (how to fill the sample bottle), dechlorination and/or preservation, and sealing and preparing the sample and shipping containers for shipment - comply with the instructions sent to you by U.S. EPA's designated laboratory concerning the handling of sample containers for specific contaminants - completely fill out the sampling forms - sign and date the sampling forms. - send the samples and the sampling forms to the laboratory designated in your instructions. <p>Verify that if the system is selected as an Index system in the State Monitoring Plan, the system assists the state or U.S. EPA in identifying appropriate sampling locations and provides information on which wells and intakes are in use at the time of sampling, well casing and screen depths (if known) for those wells, and the pumping rate of each well or intake at the time of sampling.</p> <p>Verify that, if a large system is selected for the Screening Surveys or Pre-Screen</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>Testing, the system:</p> <ul style="list-style-type: none"> - collects and arranges for testing of the contaminants in Table 2 and Table 3 of Appendix E of this document - sends the samples to one of the laboratories designated by U.S. EPA in the notification - report the test results to U.S. EPA, and provide a copy to the state, as specified in 40 CFR 141.35. <p>Verify that, if a small system is selected for the Screening Surveys or Pre-Screen Testing, the system collects samples in accordance with the instructions sent by the state or U.S. EPA, or, if informed by the state or U.S. EPA that the state or U.S. EPA will collect the sample, you must assist the state or U.S. EPA in identifying the appropriate sampling locations and in taking the samples.</p> <p>(NOTE: U.S. EPA will report the test results to you and the state.)</p>
<p>DW.160.8. The reporting of unregulated contaminant monitoring results must be done according to certain parameters by NTNC water systems (40 CFR 141.35).</p>	<p>(NOTE: The requirements outlined in this checklist item become effective January 1, 2001.)</p> <p>(NOTE: NTNC water systems serving a population of 10,000 or less are not required to report since U.S. EPA will arrange for testing and reporting of the results. However, the system will still need to comply with consumer confidence reporting and public notification requirements for these results.)</p> <p>Verify that the results of the unregulated contaminant monitoring (see checklist item DW.160.8) are provided to U.S. EPA and a copy to the state.</p> <p>Verify that results are reported within 30 days following the month in which the system received the results from the laboratory.</p> <p>(NOTE: U.S. EPA will place the data in the national drinking water contaminant occurrence database 60 days after the data is reported to allow for quality control review by systems and states.)</p> <p>Verify that the report includes information for each sample, and for each spiked sample and spike duplicate sample analyzed for quality control purposes and associated with each sample and its sample batch.</p> <p>(NOTE: See Appendix F of this document for details on the report content.)</p> <p>Verify that the information is reported in the electronic or other format specified by U.S. EPA.</p> <p>(NOTE: The laboratory to which samples were sent can report the results for the</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>system as long as the laboratory sends the system a copy for review and recordkeeping. However, the system is responsible for the reporting of the information and ensuring that the laboratory reports these results to U.S. EPA, with a copy to the state, on time.)</p> <p>(NOTE: Previously collected data can be reported for the unregulated contaminants as long as the data meets the requirements detailed in 40 CFR 141.40 (see checklist item DW.160.7.)</p>
<p>DW.160.9. NTNC water systems that add ozone or chlorine dioxide to the water in any part of the drinking water process or supply water containing a chemical disinfectant are required to meet specific monitoring requirements (40 CFR 141.130(a)(1), 141.130(b), 141.131, 141.132(a), 141.132(b)(2) and 141.132(b)(3)).</p>	<p>(NOTE: This requirement applies to Subpart H systems serving 10,000 or more persons beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water must comply with this section beginning January 1, 2004.)</p> <p>Verify that all samples are taken during normal operating conditions.</p> <p>(NOTE: Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required, if the state approves.)</p> <p>Verify that NTNC water systems using chlorine dioxide, for disinfection or oxidation, perform the following monitoring for chlorite:</p> <ul style="list-style-type: none"> – daily samples at the entrance to the distribution system plus when the daily sample exceeds the chlorite MCL, additional samples in the distribution system the following day at the entrance to the distribution system, as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible – a monthly three-sample set in the distribution system near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. <p>Verify that daily chlorite monitoring at the entrance to the distribution system is not reduced.</p> <p>(NOTE: Monthly chlorite monitoring in the distribution system may be reduced to one three-sample set per quarter after 1 yr of monitoring where no individual chlorite sample taken in the distribution system exceeds the chlorite MCL and the system has not been required to conduct additional monitoring in response to a exceedance in the daily samples. The system may remain on the reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system exceeds the chlorite MCL or the system is required to conduct additional monitoring in response to a exceedance in the daily samples.)</p> <p>Verify that systems using ozone, for disinfection or oxidation, take one sample per</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>month for each treatment plant in the system using ozone at the entrance to the distribution system while the ozonation system is operating under normal conditions.</p> <p>(NOTE: Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is < 0.05 mg/L based upon representative monthly bromide measurements for 1 yr. The system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is \geq 0.05 mg/L based upon representative monthly measurements. If the running annual average source water bromide concentration is \geq 0.05 mg/L, the system must resume routine monitoring.)</p>

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>NONTRANSIENT NONCOMMUNITY (NTNC) WATER SYSTEMS</p> <p>DW.170</p> <p>Lead and Copper</p>	<p>(NOTE: A nontransient noncommunity water system serves at least 25 of the same persons for more than six months in a year. Nontransient noncommunity water systems must also comply with the standards for public water systems (see checklist items DW.10.1 through DW.50.5) and a noncommunity water system (see checklist items DW.120.1 through DW.130.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.170.1. Monitoring for lead and copper is required to start on a specified date and be done at a specified number of sites (see the chart in Appendix I of this document (40 CFR 141.80(g), 141.86(a)(1), through 141.86(d)).</p>	<p>Verify that sample sites have been selected and sampling started as of the dates indicated in Appendix I of this document.</p> <p>Verify that the sampling sites (tier 1 sampling) selected consist of building that contain copper pipes with lead solder installed after 1982 or contain lead pipe; and/or are served by a lead service line.</p> <p>(NOTE: If there are insufficient tier 1 sites, complete the sampling pool with sampling sites that contain copper pipes with lead solder installed before 1983.)</p> <p>Verify that the procedures for sampling and granting of variances found in 40 CFR 141.86 are followed.</p> <p>Verify that, for the initial tap sample, all large water systems monitor during two consecutive 6-mo periods and all small and medium-size water systems monitor during each 6-mo period until:</p> <ul style="list-style-type: none"> – the system exceeds the lead or copper action levels and is then required to implement corrosion control treatment – the system meets the lead and copper action levels during two consecutive 6-mo monitoring periods. <p>(NOTE: A small or medium-sized water system that meets the lead and copper action levels during each of two consecutive 6-mo monitoring periods can reduce the number of sampling sites and the frequency of sampling to once a year. If action levels are met during 3 consecutive years of monitoring, the frequency may be reduced to once every 3 yr.)</p> <p>Verify that, after the installation of corrosion by January 1, 1997, large systems conduct follow-up tap monitoring during two consecutive 6 mo periods by January 1, 1998.</p> <p>Verify that, after the installation of corrosion control within 24 mo after being required to do so by the state, small and medium systems conduct follow-up monitoring for two consecutive 6- mo periods within 36 mo after being required to</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>install optimal corrosion control treatment.</p> <p>Verify that after the state has designates water quality parameter values for optimal corrosion control, large systems monitor at entry points bi-weekly and within the distribution system every 6 mo.</p> <p>(NOTE: After the state has designated water quality parameter values for optimal corrosion control, small and medium systems are required to conduct monitoring only when they exceed the lead or copper action level.)</p> <p>Verify that, for all size systems, the first monitoring period for water quality parameters began on the date the regulatory agency specifies the optimal value.</p>
<p>DW.170.2. NTNC water systems are required to meet specific standards for lead and copper action levels and reporting requirements when these levels are exceeded (40 CFR 141.80(a)(1) and 141.80(c)).</p>	<p>Verify that the concentration of lead does not exceed 0.015 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p> <p>Verify that the concentration of copper does not exceed 1.3 mg/L in more than 10 percent of tap water samples collected during any monitoring period.</p>
<p>DW.170.3. In reference to lead and copper in NTNC water systems, all water systems are required to fulfill reporting requirements (40 CFR 141.90).</p>	<p>Verify that water systems report sampling results for all tap water samples within the first 10 days following the end of each monitoring period.</p> <p>Verify that water systems report the sampling results for all source water samples within the first 10 days following the end of each source water monitoring period.</p> <p>Verify that the following reports are submitted as applicable:</p> <ul style="list-style-type: none"> – corrosion control treatment – source water treatment – lead service line replacement – demonstration of public education program.
<p>DW.170.4. Facilities with NTNC water systems must notify their users about an exceedence of the lead action level in drinking water systems (40 CFR 141.85 and 141.90(f)).</p>	<p>Verify that public education materials are distributed in the following manner when a water system exceeds the lead action level based on tap water samples:</p> <ul style="list-style-type: none"> – the material is in the appropriate languages where languages other than English are spoken by a significant proportion of the population – within 60 days after exceeding the lead action level: <ul style="list-style-type: none"> – notices are insert in each customer’s water utility bill – information is provided to the editorial departments of the major daily

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
	<p>and weekly newspapers circulated in the community</p> <ul style="list-style-type: none"> – pamphlets or brochures are delivered to pertinent facilities, organizations, schools and medical centers – public service announcements are submitted to at least five of the radio and television stations broadcasting to the community. <p>Verify that the notification tasks are repeated every 6 mo for as long as a community water system exceeds the lead action level.</p> <p>Verify that an NTNC water system delivers the public education materials by posting informational posters and distributing brochures.</p> <p>Verify that an NTNC water system repeats distribution of information at least once each calendar year in which the system exceeds the lead action level.</p> <p>(NOTE: The text of written materials and broadcast materials can be found in 40 CFR 141.85(a) and 141.85(b).)</p> <p>Verify that, by December 31st of each year, any water system, that has had to issue public education materials submits a letter to the state indicating that the system has delivered the public education materials as required each year that the levels are exceeded.</p>
<p>DW.170.5. NTNC water systems, that fail to meet the lead or copper action levels, are required to meet specific monitoring requirements (40 CFR 141.80(h) and 141.88).</p>	<p>Verify that systems, that exceed lead or copper action levels at the tap, collect one source water sample from each entry point to the distribution system within 6 mo after the exceedence.</p> <p>Verify that systems, which install source water treatment as required by the state, collects an additional source water sample from each entry point to the distribution system during two consecutive 6-mo monitoring periods.</p> <p>Verify that the system monitors as follows when the state specifies maximum permissible source water levels:</p> <ul style="list-style-type: none"> – once during the 3-yr compliance period for water systems using only groundwater – annually for water systems using surface water or a combination of surface and groundwater. <p>(NOTE: Frequency of monitoring may be reduced by the state upon request.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
DW.170.6. All large water systems and all small and medium size systems that exceed the lead or copper action level are required to monitor for water quality parameters in addition to lead and copper at the taps (40 CFR 141.40(h) and 141.87).	Verify that monitoring for water quality parameters is done according to the requirement outlined in Appendix J of this document.
DW.170.7. NTNC systems that exceed the lead or copper action level after corrosion control is installed are required to implement applicable source water treatment standards (40 CFR 141.80(e) and 141.83).	<p>Verify that systems exceeding the lead or copper action level do lead and copper source water monitoring and make a treatment recommendation to the state within 6 mo after exceeding the lead or copper action rate.</p> <p>Verify that, if the state requires the installation of source water treatment, the installation is done within 24 mo after the state’s initial response.</p> <p>Verify that followup tap water monitoring and source water monitoring is completed within 36 mo after the state’s initial response.</p>
DW.170.8. NTNC water systems are required to install and operate optimal corrosion control (40 CFR 141.80(d) and 141.82).	<p>Verify that the water system has corrosion control that minimizes the lead and copper concentrations at users’ taps while insuring that the treatment does not cause the water system to violate any of the national primary drinking water standards.</p> <p>(NOTE: Please see 40 CFR 141.81 for design details for corrosion control systems in relationship to the size of the water system.)</p>
DW.170.9. Facilities with NTNC water systems exceeding the lead action level after implementation of corrosion control and source water treatment requirements are required to replace lead service lines (40 CFR 141.80(f) and 141.84).	<p>Verify that lead service line replacement, if required, is done according to the schedules and parameters outlined in 40 CFR 141.84.</p> <p>(NOTE: A system is not required to replace an individual lead service line if the lead concentration in all service line samples from that line is less than or equal to 0.015 mg/L.)</p> <p>(NOTE: Replacement of lead service lines can stop when the first draw samples that are collected meet the lead action levels during two consecutive monitoring periods and the system submits the results to the state.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
DW.170.10. All NTNC systems subject to the lead and copper requirements are required to retain onsite all the original records of sampling data, analysis, reports, surveys, letters, evaluations, state determinations, and any other pertinent documents for at least 12 yr (40 CFR 141.80(j) and 141.91).	Verify that records are kept onsite for 12 yr.

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.200</p> <p>TRANSIENT NONCOMMUNITY WATER SYSTEMS</p>	<p>(NOTE: A transient noncommunity water system <i>does not</i> serve at least 25 of the same persons for more than six months in a year. Transient noncommunity water systems must also comply with the standards for public water systems (see checklist items DW.10.1 through DW.50.5) and a noncommunity water system (see checklist items DW.120.1 through DW.130.5). See Checklist User Guidance on page 11 of this document to determine which checklist items are applicable to the facility being audited.)</p>
<p>DW.200.1. Transient noncommunity water systems are required to conduct monitoring to determine compliance for nitrate and nitrite levels according to specific parameters (40 CFR 141.23(d) through 141.23(f)).</p>	<p>Verify that transient noncommunity water systems monitor annually for nitrate starting January 1, 1993.</p> <p>Verify that, when the MCL for nitrate is exceeded, transient noncommunity water systems do repeat monitoring quarterly for at least 1 yr following any one sample in which the concentration exceeds more than 50 percent of the MCL.</p> <p>Verify that transient noncommunity water systems take one sample at each sampling point in the compliance period beginning January 1, 1993 and ending December 31, 1995 for nitrite.</p> <p>(NOTE: After the initial sample, systems where an analytical result for nitrite is less than 50 percent of the MCL will monitor at the frequency specified by the state.)</p> <p>Verify that transient noncommunity systems repeat monitoring for nitrites quarterly for at least 1 yr after any one sample is greater than 50 percent of the MCL.</p> <p>Verify that systems, which are monitoring annually for nitrites, take each subsequent sample during the quarters which previously resulted in the highest analytical result.</p> <p>Verify that, when nitrate or nitrite samples indicate an exceedence of the MCL, a confirmation sample is taken within 24 h of receipt of the results.</p> <p>(NOTE: If the system is unable to take a confirmation sample within 24 h, it must notify consumers of the exceedence and take confirmation samples within two weeks.)</p>

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act.

COMPLIANCE CATEGORY DRINKING WATER MANAGEMENT	
REGULATORY REQUIREMENT OR MANAGEMENT PRACTICE	REVIEWER CHECKS
<p>DW.200.2. Transient noncommunity water systems are required to meet specific MRDLs related to disinfection (40 CFR 141.65).</p>	<p>Verify that transient noncommunity water systems meet the MRDLs outlined in Appendix K of this document.</p> <p>(NOTE: The MCL standards in Appendix K of this document are not applicable.)</p> <p>(NOTE: This requirement applies to Subpart H systems serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant beginning January 1, 2002. Subpart H systems serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant and systems using only groundwater not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant must comply with the MRDL beginning January 1, 2004.)</p>

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix A:
Primary Drinking Water Standards for Organic Contaminants**

This Page Intentionally Left Blank

Primary Drinking Water Standards for Organic Contaminants.

**Table 1:
Maximum Contaminant Levels Applicable to Community Water Systems (40 CFR 141.12)**

Contaminant	mg/L
Total Trihalomethanes (TTHM) (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform) and trichloromethane (chloroform))	0.10

(NOTE: The standard for TTHM only applies to community water systems subject to filtration and disinfection requirements which serve a population of 10,000 people or more until December 16, 2001. This MCL applies to community water systems that use only groundwater not under the direct influence of surface water and serve a population of 10,000 people or more until December 16, 2003. After December 16, 2003, this section is no longer applicable.)

**Table 2:
Maximum Contaminant Levels Applicable to Community and Nontransient, Noncommunity Water Systems (40 CFR 141.61(a))**

Contaminant	mg/L
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.20
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
Benzene	0.005
Carbon Tetra chloride	0.005
cis-1,2-Dichloroethylene	0.07
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1.0
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10.0
Dichloromethane	0.005
1,2,4-Trichlorobenzene	0.07
1,1,2-Trichloroethane	0.005

**Table 3:
Maximum Contaminant Levels For Synthetic Organic Contaminants Applicable to Community Water Systems and Nontransient, Noncommunity Water Systems (40 CFR 141.61(c))**

Contaminant	mg/L
Alachlor	0.002
Aldicarb	0.003
Aldicarb sulfoxide	0.004
Aldicarb sulfone	0.002
Atrazine	0.003
Carbofuran	0.04
Chlordane	0.002
Dibromochloropropane	0.0002
2,4-D	0.07
Ethylene dibromide	0.00005
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Lindane	0.0002
Methoxychlor	0.04
Pentachlorophenol	0.001
Polychlorinated biphenyls	0.0005
Toxaphene	0.003
2,4,5-TP	0.05
Benzo(a)pyrene	0.0002
Delapon	0.2
Di(2-ethylhexyl) adipate	0.4
Di(2-ethylhexyl) phthalate	0.006
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Glyphosate	0.7
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Oxamyl (Vydate)	0.2
Picloram	0.5
Simazin	0.004
2,3,7,8,-TCDD (Dioxin)	$3. \times 10^{-8}$

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix B:
Primary Drinking Water Standards for Inorganic Contaminants**

This Page Intentionally Left Blank

Primary Drinking Water Standards for Inorganic Contaminants

**Table 1:
Maximum Contaminant Levels Applicable Only to Community Water Systems
(40 CFR 141.11, 141.12, and 141.62(b)(1))**

Contaminant	mg/L
Arsenic	0.05
Fluoride	4.0
Total Trihalomethanes	0.10*

* This MCL only applies to community water systems which serve a population of 10,000 individuals or more and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process.

**Table 2:
Maximum Contaminant Levels Applicable to Community Water Systems and Nontransient,
Noncommunity Water Systems (40 CFR 141.62(b)(2) through 141.62(b)(6) and 141.62(b)(10)
through 141.62(b)(15))**

Contaminant	mg/L
Asbestos	7 million fibers/L (longer than 10 micrometers)
Barium	2.0
Cadmium	0.005
Chromium	0.1
Mercury	0.002
Selenium	0.05
Antimony	0.006
Beryllium	0.004
Cyanide (as free Cyanide)	0.2
Thallium	0.002

**Table 3:
Maximum Contaminant Levels Applicable to Community, Nontransient, Noncommunity and
Transient Noncommunity Water Systems (40 CFR 141.62(b)(7) through 141.62(b)(9))**

Contaminant	mg/L
Nitrate (as N)	10.0
Nitrite (as N)	1.0
Total Nitrate and Nitrite (as N)	10.0

This Page Intentionally Left Blank

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix C:
Detection Limitations for Inorganic Contaminants
(40 CFR 141.23(a))**

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

**Detection Limitations for Inorganic Contaminants
(40 CFR 141.23(a))**

Contaminant	MCL (mg/L)	Analytical Method	Detection Limit (mg/L)
Antimony	0.006	Atomic Absorption Furnace	0.003
		Atomic Absorption: Platform	0.0008 ⁵
		ICP Mass spectrometry	0.0004
		Hydride Atomic Absorption	0.001
Asbestos	7 MFL ¹	Transmission Electron Microscopy	0.01 million fibers/L
Barium	2.0	Atomic Absorption; furnace technique	0.002
		Atomic Absorption; direct aspiration	0.1
		Inductively Coupled Plasma	0.002(0.001)
Beryllium	0.004	Atomic Absorption, Furnace	0.0002
		Atomic Absorption: Platform	0.00002 ⁵
		Inductively Coupled Plasma ³	0.0003
		ICP Mass Spectrometry	0.0003
Cadmium	0.005	Atomic Absorption; furnace technique	0.0001
		Inductively Coupled Plasma ²	0.001
Chromium	0.1	Atomic Absorption; furnace technique	0.001
		Inductively Coupled Plasma	0.007 (0.001)
Cyanide	0.2	Distillation, Spectrophotometric ³	0.02
		Distillation, Automated, Spectrophotometric ³	0.005
		Distillation, Selective Electrode ³	0.05
		Distillation, Amenable, Spectrophotometric ⁴	0.02
Mercury	0.002	Manual Cold Vapor Technique	0.0002
		Automated Cold Vapor Technique	0.0002
Nickel	0.1	Atomic Absorption, Furnace	0.001
		Atomic Absorption: Platform	0.0006 ⁵
		Inductively Coupled Plasma ³	0.005
		ICP Mass Spectrometry	0.0005
Nitrate	10 as N	Manual Cadmium Reduction	0.01
		Automated Hydrazine Reduction	0.01
		Automated Cadmium Reduction	0.05
		Ion Selective Electrode	1.0
		Ion Chromatography	0.01
Nitrite	1 as N	Spectrophotometric	0.01
		Automated Cadmium Reduction	0.05
		Manual Cadmium Reduction	0.01
		Ion Chromatography	0.004
Selenium	0.05	Atomic Absorption; furnace	0.002
		Atomic Absorption; gaseous hydride	0.002

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

Contaminant	MCL (mg/L)	Analytical Method	Detection Limit (mg/L)
Thallium	0.002	Atomic Absorption Furnace	0.001
		Atomic Absorption: Platform	0.0007 ⁵
		ICP-Mass Spectrometry	0.0003

¹ MFL = million fibers per liter > 10 ppm.

² Using a 2x preconcentration step as noted in Method 200.7. Lower MDLs may be achieved by using a 4x preconcentration.

³ Screening method for total cyanides.

⁴ Measures “free” cyanides.

⁵ Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix D:
Detection Limitations (40 CFR 141.24(h)(18))**

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems Under the Safe Drinking Water Act

**Detection Limitations
(40 CFR 141.24(h)(18))**

Contaminant	Detection Limit
Alachlor	0.0002
Aldicarb	0.0005
Aldicarb sulfoxide	0.0005
Aldicarb sulfone	0.0008
Atrazine	0.0001
Benzo[a]pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
Dalapon	0.001
1,2- Dibromo-3-chloro propane (DBCP)	0.00002
Di (2-ethylhexyl) adipate	0.0006
Di (2-ethylhexyl) phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
2,4-D	0.0001
Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Glyphosate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001

Protocol for Conducting Environmental Compliance Audits of Public Water Systems Under the Safe Drinking Water Act

Contaminant	Detection Limit
Oxamyl	0.002
Picloram	0.0001
Pentachlorophenol	0.00004
Polychlorinated biphenyls	0.0001
Simazine	0.00007
Toxaphene	0.001
2,3,7,8-TCDD (Dioxin)	0.000000005
2,4,5-TP (Silvex)	0.0002

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix E:
Unregulated Contaminant Monitoring Regulation (1999)
(40 CFR 141.40(a)(3); 141.40(a)(4), Table 1)**

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems Under the Safe Drinking Water Act

**Unregulated Contaminant Monitoring Regulation (1999)
(40 CFR 141.40(a)(3); 141.40(a)(4), Table 1)**

Table 1--Assessment Monitoring Chemical Contaminants					
1 - Contaminant	2 - CAS Registry Number	3 - Analytical Methods	4 - Minimum Reporting Levels	5 - Sampling Location	6 - Period during which monitoring is to be completed
2,4-dinitrotoluene	121-14-2	U.S. EPA 525.2 ^a	2 µg/L ^e	EPTDS ^f	2001-2003
2,6-dinitrotoluene	606-20-2	EPA 525.2 ^a	2 µg/L ^e	EPTDS ^f	2001-2003
Acetochlor	34256-82-1	Reserved ^m	Reserved ^m	EPTDS ^f	2001-2003
DCEP mono-acid degradate	887-54-7	EPA 515.1 ^a EPA 515.2 ^a D5317-93 ^b AOAC 992.32 ^c	1 µg/L ^e	EPTDS ^f	2001-2003
DCEP di-acid degradate	2136-79-0	EPA 515.1 ^a EPA 515.2 ^a D5317-93 ^b AOAC 992.32 ^c	1 µg/L ^e	EPTDS ^f	2001-2003
4,4'-DDE	72-55-9	EPA 508 ^a EPA 508.1 ^a EPA 525.2 ^a D5812-96 ^b AOAC 990.06 ^c	0.8 µg/L ^e	EPTDS ^f	2001-2003
EPTC	759-94-4	EPA 507 ^a EPA 525.2 ^a D5475-93 ^b AOAC 991.07 ^c	1 µg/L ^e	EPTDS ^f	2001-2003
Molinate	2212-67-1	EPA 507 ^a EPA 525.2 ^a D5475-93 ^b AOAC 991.07 ^c	0.9 µg/L ^e	EPTDS ^f	2001-2003
MTBE	1634-04-4	EPA 524.2 ^a D5790-95 ^b SM 6210D ^d SM 6200B ^d	5 µg/L ^g	EPTDS ^f	2001-2003
Nitrobenzene	98-95-3	EPA 524.2 ^a D5790-95 ^b SM6210D ^d SM6200B ^d	10 µg/L ^g	EPTDS ^f	2001-2003
Perchlorate	14797-73-0	Reserved ^m	Reserved ^m	EPTDS ^f	2001-2003
Terbacil	5902-51-2	EPA 507 ^a EPA 525.2 ^a D5475-93 ^b AOAC 991.07 ^c	2 µg/L ^e	EPTDS ^f	2001-2003

Protocol for Conducting Environmental Compliance Audits of Public Water Systems Under the Safe Drinking Water Act

Table 2 - Screening Survey Chemical Contaminants To Be Sampled After Notice of Analytical Methods Availability

1 - Contaminant	2 - CAS Registry Number	3 - Analytical Methods	4 - Minimum Reporting Levels	5 - Sampling Location	6 - Period during which monitoring is to be completed
1,2-diphenylhydrazine	122-66-7	EPA 525.2 ¹	Reserved ^h	EPTDS ^f	Reserved ^h
2-methyl-phenol	95-48-7	SPE/GC/MS ¹	Reserved ^h	EPTDS ^f	Reserved ^h
2,4-dichlorophenol	120-83-2	SPE/GC/MS ¹	Reserved ^h	EPTDS ^f	Reserved ^h
2,4-dinitrophenol	51-28-5	SPE/GC/MS ¹	Reserved ^h	EPTDS ^f	Reserved ^h
2,4,6-trichlorophenol	88-06-2	SPE/GC/MS ¹	Reserved ^h	EPTDS ^f	Reserved ^h
Alachlor ESA	TBD ^h	TBD ^h	Reserved ^h	EPTDS ^f	Reserved ^h
Diazinon	333-41-5	EPA 525.2 ^k	Reserved ^h	EPTDS ^f	Reserved ^h
Disulfoton	298-04-4	EPA 525.2 ^k	Reserved ^h	EPTDS ^f	Reserved ^h
Diuron	330-54-1	SPE/HPLC/UV ^j	Reserved ^h	EPTDS ^f	Reserved ^h
Fonofos	944-22-9	EPA 525.2 ¹	Reserved ^h	EPTDS ^f	Reserved ^h
Linuron	330-55-2	SPE/HPLC/UV ^j	Reserved ^h	EPTDS ^f	Reserved ^h
Polonium-210	13981-52-7	Reserved ^h	Reserved ^h	Reserved ^h	Reserved ^h
Prometon	1610-18-0	EPA 525.2 ^k	Reserved ^h	EPTDS ^f	Reserved ^h
Terbufos	13071-79-9	EPA 525.2 ^k	Reserved ^h	EPTDS ^f	Reserved ^h
RDX	121-82-4	Reserved ^h	Reserved ^h	EPTDS ^f	Reserved ^h
Screening Survey Microbiological Contaminants To Be Sampled After Notice of Analytical Methods Availability					
Aeromonas	Reserved ^h	Reserved ^h	Reserved ^h	Reserved ^h	Reserved ^h

Protocol for Conducting Environmental Compliance Audits of Public Water Systems Under the Safe Drinking Water Act

Table 3 - Pre-Screen Testing Radionuclides To Be Sampled After Notice of Analytical Methods Availability					
1 - Contaminant	2 - CAS Registry Number	3 - Analytical Methods	4 - Minimum Reporting Levels	5 - Sampling Location	6 - Period during which monitoring is to be completed
Lead-210	14255-04-0	Reserved ^h	Reserved ^h	Reserved ^h	Reserved
Pre-Screen Testing Microorganisms To Be Sampled After Notice of Analytical Methods Availability					
Cyanobacteria (blue-green algae, other freshwater algae and their toxins).					
Echoviruses					
Coxsackieviruses					
Helicobacter pylori					
Microsporidia	Reserved ^h	Reserved ^h	Reserved ^h	Reserved ^h	Reserved ^h
Calciviruses	Reserved ^h	Reserved ^h	Reserved ^h	Reserved ^h	Reserved ^h
Adenoviruses	Reserved ^h	Reserved ^h	Reserved ^h	Reserved ^h	Reserved ^h

Column headings are:

- 1 - Chemical or microbiological contaminant: the name of the contaminants to be analyzed.
- 2 - CAS (Chemical Abstract Service Number) Registry No. or Identification Number: a unique number identifying the chemical contaminants.
- 3 - Analytical Methods: method numbers identifying the methods that must be used to test the contaminants.
- 4 - Minimum Reporting Level: the value and unit of measure at or above which the concentration or density of the contaminant must be measured using the Approved Analytical Methods.
- 5 - Sampling Location: the locations within a PWS at which samples must be collected.
- 6 - Years During Which Monitoring to Be Completed: The years during which the sampling and testing are to occur for the indicated contaminant. The procedures shall be done in accordance with the documents listed below. The incorporation by reference of the following documents listed in footnotes b-d was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at U.S. EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

^a The version of the U.S. EPA methods which you must follow for this Rule are listed at 40 CFR 141.24 (e).

^b Annual Book of ASTM Standards, 1996 and 1998, Vol. 11.02, American Society for Testing and Materials. Method D5812-96 is located in the Annual Book of ASTM Standards, 1998, Vol. 11.02. Methods D5790-95, D5475-93, and D5317-93 are located in the Annual Book of ASTM Standards, 1996 and 1998, Vol. 11.02. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

^b Official Methods of Analysis of AOAC (Association of Official Analytical Chemist) International, Sixteenth Edition, 4th Revision, 1998, Volume I, AOAC International, First Union National Bank Lockbox, PO Box 75198, Baltimore, MD 21275-5198. 1-800-379-2622.

Protocol for Conducting Environmental Compliance Audits of Public Water Systems Under the Safe Drinking Water Act

- ^d SM 6210 D is only found in the 18th and 19th editions of Standard Methods for the Examination of Water and Wastewater, 1992 and 1995, American Public Health Association; either edition may be used. SM 6200 B is only found in the 20th edition of Standard Methods for the Examination of Water and Wastewater, 1998. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.
- ^e Minimum Reporting Level determined by multiplying by 10 the least sensitive method's minimum detection limit (MDL = standard deviation times the Student's T value for 99% confidence level with n-1 degrees of freedom), or when available, multiplying by 5 the least sensitive method's estimated detection limit (where the EDL equals the concentration of compound yielding approximately a 5 to 1 signal to noise ratio or the calculated MDL, whichever is greater).
- ^f Entry Points to the Distribution System (EPTDS), After Treatment, representing each non-emergency water source in routine use over the 12-mo period of monitoring; sampling must occur at the EPTDS, unless the state has specified other sampling points that are used for compliance monitoring
40 CFR 141.24 (f)(1), (2), and (3). See 40 CFR 141.40(a)(5)(ii)(C) for a complete explanation of requirements, including the use of source (raw) water sampling points.
- ^g Minimum Reporting Levels (MRL) for VOCs determined by multiplying either the published Method Detection Limit (MDL) or 0.5 µg/L times 10, whichever is greater. The MDL of 0.5 µg/L (0.0005 mg/L) was selected to conform to VOC MDL requirements of 40 CFR 141.24(f)(17)(i)(E).
- ^h To be Determined at a later time
- ⁱ Compound currently not listed as a contaminant in this method.
- ^j Methods development currently in progress to develop a solid phase extraction/high performance liquid chromatography/ultraviolet method for the determination of this compound.
- ^k Compound listed as being a contaminant using U.S. EPA Method 525.2; however, adequate sample preservation is not available. Preservation studies currently being conducted to develop adequate sample preservation.
- ^l Methods development currently in progress to develop a solid phase extraction/gas chromatography/mass spectrometry method for the determination of this compound.
- ^m If not determined by regulation by December 31, 2000, this contaminant will become part of List 2.

Protocol for Conducting Environmental Compliance Audits of Public Water Systems Under the Safe Drinking Water Act

Table 4 - Water Quality Parameters To Be Monitored With UCMR Contaminants				
Parameter	Contaminant Type	Methodology		
		EPA Method	Standard Methods¹	Other
pH	Chemical; Microbiological	² 150.1 ² 150.2	4500-H ⁺ B	ASTM D1293-84 ³ ASTM D1293-95 ³
Turbidity	Microbiological	^{4,5} 180.1	2130 B ⁴	GLI Method 2 ^{4,6}
Temperature	Microbiological	2550	
Free Disinfectant Residual	Microbiological	4500-C1 D 4500-C1 F 4500-C1 G 4500-C1 H 4500-C1O ₂ D 4500-C1O ₂ E 4500-O ₃ B	ASTM D 1253-86 ³
Total Disinfectant Residual	Microbiological	4500-C1 D 4500-C1 E ⁴ 4500-C1 F 4500-C1 G ⁴ 4500-C1 I	ASTM D 1253-86 ³

The procedures shall be done in accordance with the documents listed below. The incorporation by reference of the following documents was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 800-426-4791. Documents may be inspected at U.S. EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460 (Telephone: 202-260-3027); or at the Office of Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

¹ The 18th and 19th Editions of Standard Methods for the Examination of Water and Wastewater, 1992 and 1995. Methods 2130 B; 2550; 4500-C1 D, E, F, G, H, I; 4500-C1O₂ D, E; 4500-H⁺ B; and 4500-O₃ B in the 20th edition Standard Methods for the Examination of Water and Wastewater, 1998, American Public Health Association, 1015 Fifteenth St. NW, Washington D.C., 20005.

² Methods 150.1 and 150.2 are available from U.S. EPA, NERL, 26 W. Martin Luther King Dr., Cincinnati, Ohio 45268. The identical methods are also in "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, March 1983, available from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Rd., Springfield, Virginia 22161, PB84-128677. (Note: NTIS toll-free number is 800-553-6847.)

³ Annual Book of ASTM Standards, Editions 1994 and 1996, Volumes 11.01, American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428. Version D1293-84 is located in the Annual Book of ASTM Standards, 1994, Volumes 11.01. Version D1293-95 is located in the Annual Book of ASTM Standards, 1996, Volumes 11.01.

⁴ "Technical Notes on Drinking Water," EPA-600/R-94-173, October 1994, Available at NTIS, PB95-104766.

⁵ "Methods for the Determination of Inorganic Substances in Environmental Samples," EPA-600/R-93-100, August 1993. Available at NTIS, PB94-121811

⁶ GLI Method 2, "Turbidity," November 2, 1992, Great Lakes Instruments Inc., 8855 North 55th St., Milwaukee, Wisconsin 53223.

Table 5 - Monitoring Frequency by Contaminant and Water Source Types			
Contaminant Type	Water Source Type	TimeFrame	Frequency
Chemical	Surface Water	12 mo	Four quarterly samples taken as follows: Select either the first, second, or third month of a quarter and sample in that same month of each of four (4) consecutive quarters ^a to ensure that one of those sampling events occurs during the vulnerable time. ^b
	Groundwater	12 mo	Two (2) times in a year taken as follows: Sample during one (1) month of the vulnerable time ^b and during one (1) month five (5) to seven (7) months earlier or later. ^c
Microbiological	Surface and groundwater	12 mo	Two (2) times in a year taken as follows: Sample during one (1) month of the vulnerable time ^b and during one (1) month five (5) to seven (7) months earlier or later. ^c

^a “Select either the first, second, or third month of a quarter and sample in that same month of each of four (4) consecutive quarters” means that you must monitor during each of the four (4) months of either: January, April, July, October; or February, May, August, November; or March, June, September, December.

^b “Vulnerable time” means May 1 through July 31, unless the state or U.S. EPA informs you that it has selected a different time period for sampling as your system's vulnerable time.

^c “Sample during one (1) month of the vulnerable time and during one (1) month five (5) to seven (7) months earlier or later” means, for example, that if you select May as your “vulnerable time” month to sample, then one (1) month five (5) to seven (7) months earlier would be either October, November or December of the preceding year, and one (1) month five (5) to seven (7) months later would be either, October, November, or December of the same year.

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix F:
Unregulated Contaminant Monitoring Reporting Requirements
(40 CFR 141.35, Table 1)**

This Page Intentionally Left Blank

**Unregulated Contaminant Monitoring Reporting Requirements
(40 CFR 141.35, Table 1)**

Data element	Definition
1. Public Water System (PWS) Identification Number	The code used to identify each PWS. The code begins with the standard two-character postal state abbreviation; the remaining seven characters are unique to each PWS.
2. Public Water System Facility Identification Number--Source, Treatment Plant, and Sampling Point	An identification number established by the state, or, at the state's discretion, the PWS, that is unique to the system for an intake for each source of water, a treatment plant and a sampling point. Within each PWS, each intake, treatment plant and sampling point must receive a unique identification number, including, for intake; surface water intake, ground water well or wellfield centroid; and including, for sampling point; entry points to the distribution system, wellhead, intake, locations within the distribution system, or other representative sampling point specified by the state. The same identification number must be used consistently throughout the history of unregulated contaminant monitoring to represent the facility.
3. Sample Collection Date.	The date the sample is collected reported as 4-digit year, 2-digit month, and 2-digit day.
4. Sample Identification Number.	A numeric value assigned by the PWS or laboratory to uniquely identify a specific sampling occurrence.
5. Contaminant/Parameter	The unregulated contaminant or water quality parameter for which the sample is being analyzed.
6. Analytical Results--Sign.	An alphanumeric value indicating whether the sample analysis result was: (a) (<) "less than" means the detected at a level "less than" the MRL. (b) (=) "equal to" means the contaminant was detected at a level "equal to" the value reported in "Analytical Result--Value."
7. Analytical Result--Value	The actual numeric value of the analysis for chemical and microbiological results, or the minimum reporting level (MRL) if the analytical result is less than the specified contaminant's MRL

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

Data element	Definition
8. Analytical Result Measure.	Unit of The unit of measurement for the analytical results reported. [(e.g., µg/L); colony-forming units per milliliter, (CFU/mL), etc.]
9. Analytical Method Number	The identification number of the analytical method used.
10. Sample Analysis Type	The type of sample collected. Permitted values include: (a) Field Sample--sample collected and submitted for analysis under this rule. (b) Batch Spike/Spike Duplicate--Samples associated with a batch used for calculating analytical precision and accuracy. A batch is defined as the set of field samples plus one spiked sample and one spiked duplicate sample analyzed for contaminant concentrations
11. Sample Batch Identification Number	A number assigned by the laboratory to the batch of samples analyzed with the spiked sample (at the spiking concentration reported), to be reported as 9-digit laboratory number (assigned by the state or U.S. EPA), 4-digit year, 2-digit month, 2-digit day and 2-digit batch number.
12. Detection Level	“Detection level” refers to the detection limit applied to both the method and equipment. Detection limit is the lowest concentration of a target contaminant that a given method or piece of equipment can reliably ascertain and report as greater than zero (e.g., Instrument Detection Limit, Method Detection Limit, or Estimated Detection Limit).
13. Detection Level Unit of Measure	The unit of measure to express the concentration, count, or other value of a contaminant level for the detection level reported. (e.g., µg/L, colony forming units/mL (CFU/mL), etc.)
14. Analytical Precision	Precision is the degree of agreement among a set of repeated measurements and is monitored through the use of replicate samples or measurements. For purposes of the Unregulated Contaminant Monitoring Regulation (UCMR), Analytical Precision is defined as the relative percent difference (RPD) between spiked matrix duplicates. The RPD for the spiked matrix duplicates analyzed in the same batch of samples as the analytical result being reported is to be entered in this field. Precision is calculated as Relative Percent Difference (RPD) between spiked matrix duplicates using, $RPD = [(X_1 - X_2) / (X_1 + X_2)/2] \times 100$

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

Data element	Definition
15. Analytical Accuracy	Accuracy describes how close a result is to the true value measured through the use of spikes, standards, surrogates or performance evaluation samples. For purposes of unregulated contaminant monitoring, accuracy is defined as the percent recovery of the contaminant in the spiked matrix sample analyzed in the same analytical batch as the sample result being reported and calculated using; $\% \text{ recovery} = [(\text{amt. found in spiked sample} - \text{amt. found in sample}) / \text{amt. spiked}] \times 100$
16. Spiking Concentration	The concentration of method analytes added to a sample to be analyzed for calculating analytical precision and accuracy where the value reported use the same unit of measure reported for Analytical Results
17. Presence/Absence	Chemicals: Presence--a response was produced by the analysis (i.e., greater than or equal to the MDL but less than the MRL)/Absence--no response was produced by the analysis (i.e., less than the MDL). Microbiologicals: Presence--indicates a response was produced by the analysis / Absence--indicates no response was produced by the analysis.

This Page Intentionally Left Blank

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix G:
Coliform Bacteria Sampling Frequency (40 CFR 141.21(a)(2))**

This Page Intentionally Left Blank

**Coliform Bacteria Sampling Frequency
(40 CFR 141.21(a)(2))**

Population Served	Minimum Number of Samples Per Month
¹ 25 to 1000	1
1001 to 2500	2
2501 to 3300	3
3301 to 4100	4
4101 to 4900	5
4901 to 5800	6
5801 to 6700	7
6701 to 7600	8
7601 to 8500	9
8501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

Population Served	Minimum Number of Samples Per Month
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480

¹ Includes public water systems which have at least 15 service connections, but serve fewer than 25 persons.

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix H:
Consumer Confidence Report Contents
(40 CFR 141.153 and 141.154)**

This Page Intentionally Left Blank

**Consumer Confidence Report Contents
(40 CFR 141.153 and 141.154)**

- a. Each community water system must provide to its customers an annual report that contains the information specified below in items “a” through “h” and the required additional health information listed on pages H4 through H5.” The full text of the regulations regarding Consumer Confidence Report contents can be found in 40 CFR 141.153 and 141.154.
- b. Each report must identify the source(s) of the water delivered by the community water system by providing information on:
 1. The type of the water: e.g., surface water, groundwater; and
 2. The commonly used name (if any) and location of the body (or bodies) of water.

If a source water assessment has been completed, the report must notify consumers of the availability of this information and the means to obtain it. In addition, systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information.

Where a system has received a source water assessment from the primacy agency, the report must include a brief summary of the system’s susceptibility to potential sources of contamination, using language provided by the primacy agency or written by the operator.

- c. Each report must include the following definitions:
 1. Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
 2. Maximum Contaminant Level or MCL: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

A report for a community water system operating under a variance or an exemption issued under Sections 1415 or 1416 of the SDWA must include the following definition: Variances and Exemptions: state or U.S. EPA permission not to meet an MCL or a treatment technique under certain conditions.

A report that contains data on a contaminant for which U.S. EPA has set a treatment technique or an action level must include one or both of the following definitions as applicable:

1. Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
2. Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

- d. Information on Detected Contaminants. This subsection specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring (except *Cryptosporidium*). It applies to:
 1. Contaminants subject to an MCL, action level, or treatment technique (regulated contaminants)
 2. Contaminants for which monitoring is required by 40 CFR 141.40 (unregulated contaminants); and
 3. Disinfection by-products or microbial contaminants for which monitoring is required by 40 CFR 141.142 and 141.143, except as provided under paragraph (e)(1) of this section, and which are detected in the finished water.

The data relating to these contaminants must be displayed in one table or in several adjacent tables. Any additional monitoring results that a community water system chooses to include in its report must be displayed separately.

The data must be derived from data collected to comply with U.S. EPA and state monitoring and analytical requirements during calendar year 1998 for the first report and subsequent calendar years thereafter except that:

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

1. Where a system is allowed to monitor for regulated contaminants less often than once a year, the table(s) must include the date and results of the most recent sampling and the report must include a brief statement indicating that the data presented in the report are from the most recent testing done in accordance with the regulations. No data older than 5 years need be included.
2. Results of monitoring in compliance with 40 CFR 141.142 and 141.143 need only be included for 5 years from the date of last sample or until any of the detected contaminants becomes regulated and subject to routine monitoring requirements, whichever comes first.

For detected regulated contaminants (listed in Appendix A to 40 CFR 141), the table(s) must contain:

1. The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided in Appendix A to 40 CFR 141);
2. The MCLG for that contaminant expressed in the same units as the MCL;
3. If there is no MCL for a detected contaminant, the table must indicate that there is a treatment technique, or specify the action level, applicable to that contaminant, and the report must include the definitions for treatment technique and/or action level, as appropriate, specified in paragraph(c)(3) of 40 CFR 141.153;
4. For contaminants subject to an MCL, except turbidity and total coliforms, the highest contaminant level used to determine compliance with an NPDWR and the range of detected levels, as follows:
 - a. When compliance with the MCL is determined annually or less frequently: The highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.
 - b. When compliance with the MCL is determined by calculating a running annual average of all samples taken at a sampling point: the highest average of any of the sampling points and the range of all sampling points expressed in the same units as the MCL.
 - c. When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all sampling points: the average and range of detection expressed in the same units as the MCL.
5. For turbidity.
 - a. When it is reported pursuant to 40 CFR 141.13: The highest average monthly value.
 - b. When it is reported pursuant to the requirements of 40 CFR 141.71: the highest monthly value. The report should include an explanation of the reasons for measuring turbidity.
 - c. When it is reported pursuant to 40 CFR 141.73 or 141.173: The highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in 40 CFR 141.73 or 151.173 for the filtration technology being used. The report should include an explanation of the reasons for measuring turbidity;
6. For lead and copper: the 90th percentile value of the most recent round of sampling and the number of sampling sites exceeding the action level;
7. For total coliform:
 - a. The highest monthly number of positive samples for systems collecting fewer than 40 samples per month; or
 - b. The highest monthly percentage of positive samples for systems collecting at least 40 samples per month;
8. For fecal coliform: The total number of positive samples; and
9. The likely source(s) of detected contaminants to the best of the operator's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and should be used when available to the operator. If the operator lacks specific information on the likely source, the report must include one or more of the typical sources for that contaminant listed in Appendix B to 40 CFR 141 which are most applicable to the system.

If a community water system distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the table should contain a separate

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

column for each service area, and the report should identify each separate distribution system. Alternatively, systems could produce separate reports tailored to include data for each service area.

The table(s) must clearly identify any data indicating violations of MCLs or treatment techniques and the report must contain a clear and readily understandable explanation of the violation including: the length of the violation, the potential adverse health effects, and actions taken by the system to address the violation. To describe the potential health effects, the system must use the relevant language of appendix C to 40 CFR 141.

For detected unregulated contaminants for which monitoring is required (except *Cryptosporidium*), the table(s) must contain the average and range at which the contaminant was detected. The report may include a brief explanation of the reasons for monitoring for unregulated contaminants.

e. Information on *Cryptosporidium*, radon, and other contaminants:

If the system has performed any monitoring for *Cryptosporidium*, including monitoring performed to satisfy the requirements of 40 CFR 141.143, which indicates that *Cryptosporidium* may be present in the source water or the finished water, the report must include:

1. A summary of the results of the monitoring; and
2. An explanation of the significance of the results.

If the system has performed any monitoring for radon that indicates that radon may be present in the finished water, the report must include:

1. The results of the monitoring; and
2. An explanation of the significance of the results.

If the system has performed additional monitoring that indicates the presence of other contaminants in the finished water, U.S. EPA strongly encourages systems to report any results that may indicate a health concern. To determine if results may indicate a health concern, U.S. EPA recommends that systems find out if U.S. EPA has proposed an NPDWR or issued a health advisory for that contaminant by calling the Safe Drinking Water Hotline (800-426-4791). U.S. EPA considers detects above a proposed MCL or health advisory level to indicate possible health concerns. For such contaminants, U.S. EPA recommends that the report include:

1. The results of the monitoring; and
2. An explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.

f. Compliance with NPDWR. In addition to the requirements of 40 CFR 141.153(d)(6), the report must note any violation that occurred during the year covered by the report of a requirement listed below, and include a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps the system has taken to correct the violation.

1. Monitoring and reporting of compliance data;
2. Filtration and disinfection prescribed by Subpart H of 40 CFR 141. For systems that have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes which constitutes a violation, the report must include the following language as part of the explanation of potential adverse health effects: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.
3. Lead and copper control requirements prescribed by Subpart I of 40 CFR 141. For systems that fail to take one or more actions prescribed by 40 CFR 141.80(d), 141.81, 141.82, 141.83, or 141.84,

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

the report must include the applicable language of Appendix C of 40 CFR 141 for lead, copper, or both.

4. Treatment techniques for Acrylamide and Epichlorohydrin prescribed by 40 CFR 141, Subpart K. For systems that violate the requirements of 40 CFR 141, Subpart K, the report must include the relevant language from Appendix C to 40 CFR 141.
 5. Recordkeeping of compliance data.
 6. Special monitoring requirements prescribed by 40 CFR 141.40 and 141.41; and
 7. Violation of the terms of a variance, an exemption, or an administrative or judicial order.
- g. Variances and Exemptions. If a system is operating under the terms of a variance or an exemption issued under Sections 1415 or 1416 of the SDWA, the report must contain:
1. An explanation of the reasons for the variance or exemption;
 2. The date on which the variance or exemption was issued;
 3. A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption; and
 4. A notice of any opportunity for public input in the review, or renewal, of the variance or exemption.

h. Additional information:

The report must contain a brief explanation regarding contaminants that may reasonably be expected to be found in drinking water including bottled water. This explanation may include the language of items h(1) through h(3) listed below or systems may use their own comparable language. The report must also include the language of item h(4) below.

1. The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.
2. Contaminants that may be present in source water include:
 - a. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
 - b. Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
 - c. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
 - d. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
 - e. Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.
3. To ensure that tap water is safe to drink, U.S. EPA prescribes regulations to limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

4. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the U.S. EPA's Safe Drinking Water Hotline (800-426-4791).

The report must include the telephone number of the owner, operator, or designee of the community water system as a source of additional information concerning the report.

In communities with a large proportion of non-English speaking residents, as determined by the Primacy Agency, the report must contain information in the appropriate language(s) regarding the importance of the report or contain a telephone number or address where such residents may contact the system to obtain a translated copy of the report or assistance in the appropriate language.

The report must include information (e.g., time and place of regularly scheduled board meetings) about opportunities for public participation in decisions that may affect the quality of the water.

The systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purpose of the report.

Required Additional Health Information. (40 CFR 141.54)

- a. All reports must prominently display the following language: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. U.S. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).
- b. A system that detects arsenic at levels above 25 µg/l, but below the MCL:
 1. Must include in its report a short informational statement about arsenic, using language such as: U.S. EPA is reviewing the drinking water standard for arsenic because of special concerns that it may not be stringent enough. Arsenic is a naturally-occurring mineral known to cause cancer in humans at high concentrations.
 2. May write its own educational statement, but only in consultation with the Primacy Agency.
- c. A system that detects nitrate at levels above 5 mg/L, but below the MCL:
 1. Must include a short informational statement about the impacts of nitrate on children using language such as: Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than 6 mo of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask advice from your health care provider.
 2. May write its own educational statement, but only in consultation with the Primacy Agency.
- d. Systems that detect lead above the action level in more than 5%, but fewer than 10%, of homes sampled:
 1. Must include a short informational statement about the special impact of lead on children using language such as: Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).
 2. May write its own educational statement, but only in consultation with the Primacy Agency.

This Page Intentionally Left Blank

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix I:
Monitoring and Sampling Parameters for Lead and Copper in
Drinking Water (40 CFR 141.86(c) and 141.86(d))**

This Page Intentionally Left Blank

**Monitoring and Sampling Parameters for Lead and Copper in Drinking Water
(40 CFR 141.86(c) and 141.86(d))**

Number of Sampling Sites Required		
System Size (people served)	No. of sites (standard monitoring)	No. of sites (reduced monitoring)
> 100,000	100	50
10,001 - 100,000	60	30
3301 - 10,000	40	20
501 - 3300	20	10
101 - 500	10	5
<= 100	5	5

Dates for the Start of Monitoring	
System Size (people served)	First 6-mo monitoring period begins on:
> 50,000	January 1, 1992
3301 - 50,000	July 1, 1992
<= 3300	July 1, 1993

This Page Intentionally Left Blank

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix J:
Monitoring Requirements for Water Quality Parameters
(40 CFR 141.87)**

This Page Intentionally Left Blank

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

**Monitoring Requirements for Water Quality Parameters
(40 CFR 141.87)¹**

Monitoring Period	Parameters²	Location	Frequency
Initial Monitoring	pH, alkalinity, orthophosphate or silica ³ , calcium, conductivity, temperature	Taps and at entry points in distribution system	Every 6 mo
After Installation of Corrosion Control	pH, alkalinity, orthophosphate or silica, calcium ⁴	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual ⁵	Entry points to distribution system	Biweekly
After state Specifies Parameter Values for Optimal Corrosion Control	pH, alkalinity, orthophosphate or silica ³ , calcium ⁴	Taps	Every 6 mo
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual ⁵	Entry points to distribution system	Biweekly
Reduced Monitoring	pH, alkalinity, orthophosphate or silica ³ , calcium ⁴	Taps	Every 6 mo at a reduced number of sites
	pH, alkalinity dosage rate and concentration (if alkalinity adjusted as a part of corrosion control), inhibitor dosage rate and inhibitor residual ⁵	Entry points to distribution system	Biweekly

1. NOTE: This table is for illustrative purposes, consult the text of the regulation for actual details).
2. Small and medium-size systems have to monitor for water quality parameters only during monitoring periods in which the system exceeds the lead or copper action level.
3. Orthophosphates must be measured only when an inhibitor containing a phosphate compound is used. Silica must be measured only when an inhibitor containing silicate compounds is used.
4. Calcium must be measured only when calcium carbonate stabilization is used as a part of corrosion control.
5. Inhibitor dosage rates and inhibitor residual concentrations (orthophosphates or silica) must be measured only when an inhibitor is used.

This Page Intentionally Left Blank

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix K:
Maximum Contaminant Level and Maximum Residual Disinfectant
Level Requirements Related to Disinfection
(40 CFR 141.64 and 141.65)**

This Page Intentionally Left Blank

**Maximum Contaminant Level and Maximum Residual Disinfectant Level
Requirements Related to Disinfection
(40 CFR 141.64 and 141.65)**

The MCLs for disinfection byproducts are as follows:

Disinfection byproduct	MCL (mg/L)
Total trihalomethanes (TTHM)	0.080
Haloacetic acids (five) (HAA5)	0.060
Bromate	0.010
Chlorite	1.0

Maximum residual disinfectant levels (MRDLs) are as follows:

Disinfection residual	MRDL (mg/L)
Chlorine	4.0 (as Cl ₂).
Chloramines	4.0 (as Cl ₂).
Chlorine dioxide	0.8 (as ClO ₂).

This Page Intentionally Left Blank

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix L:
Monitoring Frequency for Total Trihalomethanes and
Haloacetic Acids (Fives) (40 CFR 141.132(b))**

This Page Intentionally Left Blank

**Monitoring Frequency for Total Trihalomethanes and Haloacetic Acids (Fives)
(40 CFR 141.132(b))**

Table 1: Routine Monitoring Frequency for TTHM and HAA5

Type of system	Minimum monitoring frequency	Sample location in the distribution system
Subpart H system serving at least 10,000 persons.	Four water samples per quarter per treatment plant.	At least 25% of all samples collected each quarter at locations representing maximum residence time. Remaining samples taken at locations representative of at least average residence time in the distribution system and representing the entire distribution system, taking into account number of persons served, different sources of water, and different treatment methods. ¹
Subpart H system serving from 500 to 9,999 persons.	One water sample per quarter per treatment plant.	Locations representing maximum residence time. ¹
Subpart H system serving < 500 persons.	One sample per year per treatment plant during month of warmest water temperature.	Locations representing maximum residence time. ¹ If the sample (or average of annual samples, if more than one sample is taken) exceeds MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until system meets reduced monitoring criteria (see 40 CFR 141.132(c))
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	One water sample per quarter per treatment plant ² .	Locations representing maximum residence time. ¹
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving < 10,000 persons.	One sample per year per treatment plant ² during month of warmest water temperature.	Locations representing maximum residence time. ¹ If the sample (or average of annual samples, if more than one sample is taken) exceeds MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until system meets criteria for reduced monitoring (see 40 CFR 141.132(c))

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

¹ If a system elects to sample more frequently than the minimum required, at least 25% of all samples collected each quarter (including those taken in excess of the required frequency) must be taken at locations that represent the maximum residence time of the water in the distribution system. The remaining samples must be taken at locations representative of at least average residence time in the distribution system.

² Multiple wells drawing water from a single aquifer may be considered one treatment plant for determining the minimum number of samples required, with state approval in accordance with criteria developed under 40 CFR 142.16(f)(5).

Table 2: Reduced Monitoring Frequency for TTHM and HAA5

If you are a . . .	You may reduce monitoring if you have monitored at least one year and your . .	To this level
Subpart H system serving at least 10,000 persons which has a source water annual average TOC level before any treatment, ≤ 4.0 mg/L.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.30 mg/L.	One sample per treatment plant per quarter at distribution system location reflecting maximum residence time.
Subpart H system serving from 500 to 9999 persons which has a source water annual average TOC level, before any treatment, ≤ 4.0 mg/L.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature. NOTE: Any Subpart H system serving fewer than 500 persons may not reduce its monitoring to < one sample per treatment plant per year.
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving at least 10,000 persons.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	TTHM annual average ≤ 0.040 mg/L and HAA5 annual average ≤ 0.030 mg/L for two consecutive years or TTHM annual average ≤ 0.020 mg/L and HAA5 annual average ≤ 0.015 mg/L for 1 yr.	One sample per treatment plant per 3 yr monitoring cycle at distribution system location reflecting maximum residence time during month of warmest water temperature with the 3-yr cycle beginning on January 1 following quarter in which system qualifies for reduced monitoring.

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix M:
Reporting Requirements (40 CFR 141.134(b))**

This Page Intentionally Left Blank

**Reporting Requirements
(40 CFR 141.134(b))**

Disinfection Byproducts, systems must report the information specified in the following table:

If you are a...	You must report... ¹
System monitoring for TTHM and HAA5 under the requirements of 40 CFR 141.132(b) on a quarterly or more frequent basis.	<ol style="list-style-type: none"> (1) The number of samples taken during the last quarter. (2) The location, date, and result of each sample taken during the last quarter. (3) The arithmetic average of all samples taken in the last quarter. (4) The annual arithmetic average of the quarterly arithmetic averages of this section for the last four quarters. (5) Whether the MCL exceeded.
System monitoring for TTHMs and HAA5 under the requirements of 40 CFR 141.132(b) less frequently than quarterly (but at least annually).	<ol style="list-style-type: none"> (1) The number of samples taken during the last year (2) The location, date, and result of each sample taken during the last quarter. (3) The arithmetic average of all samples taken over the last year. (4) Whether the MCL was exceeded.
System monitoring for TTHMs and HAA5 under the requirements of 40 CFR 141.132(b) less frequently than annually.	<ol style="list-style-type: none"> (1) The location, date, and result of the last sample taken. (2) Whether the MCL was exceeded.
System monitoring for chlorite under the requirements of 40 CFR 141.132(b).	<ol style="list-style-type: none"> (1) The number of samples taken each month for the last 3 mo. (2) The location, date, and result of each sample taken during the last quarter. (3) For each month in the reporting period, the arithmetic average of all samples taken in the month. (4) Whether the MCL was exceeded, and in which month it was exceeded.
System monitoring for bromate under the requirements of 40 CFR 141.132(b).	<ol style="list-style-type: none"> (1) The number of samples taken during the last quarter (2) The location, date, and result of each sample taken during the last quarter. (3) The arithmetic average of the monthly arithmetic averages of all samples in the last year. (4) Whether the MCL was exceeded.

Protocol for Conducting Environmental Compliance Audits of Public Water Systems under the Safe Drinking Water Act

Disinfectants, systems must report the information specified in the following table:

If you are a...	You must report... ¹
System monitoring for chlorine or chloramines under the requirements of 40 CFR 141.132(c).	<ul style="list-style-type: none"> (1) The number of samples taken during each month of the last quarter. (2) The monthly arithmetic average of all samples taken in each month for the last 12 mo. (3) The arithmetic average of all monthly averages for the last 12 mo. (4) Whether the MRDL was exceeded.
System monitoring for chlorine dioxide under the requirements of 40 CFR 141.132(c).	<ul style="list-style-type: none"> (1) The dates, results, and locations of samples taken during the last quarter. (2) Whether the MRDL was exceeded. (3) Whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute/nonacute.

¹ The state may choose to perform calculations and determine whether the MRDL was exceeded, in lieu of having the system report that information.

Disinfection Byproduct Precursors and Enhanced Coagulation or Enhanced Softening, systems must report the information specified in the following table:

If you are a . . .	You must report . . . ¹
System monitoring monthly or quarterly for TOC under the requirements of 40 CFR 141.132(d) and required to meet the enhanced coagulation or enhanced softening requirements in 40 CFR 141.135(b)(2) or (3).	<ul style="list-style-type: none"> (1) The number of paired (source water and treated water, prior to continuous disinfection) samples taken during the last quarter. (2) The location, date, and result of each paired sample and associated alkalinity taken during the last quarter. (3) For each month in the reporting period that paired samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal. (4) Calculations for determining compliance with the TOC percent removal requirements, as provided in 40 CFR 141.135(c)(1). (5) Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in 40 CFR 141.135(b) for the last four quarters.
System monitoring monthly or quarterly for TOC under the requirements of 40 CFR 141.132(d) and meeting one or more of the alternative compliance criteria in 40 CFR 141.135(a)(2) or (3).	<ul style="list-style-type: none"> (1) The alternative compliance criterion that the system is using. (2) The number of paired samples taken during the last quarter. (3) The location, date, and result of each paired sample and associated alkalinity taken during the last

Disinfection Byproduct Precursors and Enhanced Coagulation or Enhanced Softening, systems must report the information specified in the following table:

If you are a . . .	You must report . . . ¹
	<p>quarter.</p> <p>(4) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for systems meeting a criterion in 40 CFR 141.135(a)(2)(i) or (iii) or of treated water TOC for systems meeting the criterion in 40 CFR 141.135(a)(2)(ii).</p> <p>(5) The running annual arithmetic average based on monthly averages (or samples) of source water SUVA for systems meeting criterion in 40 CFR 141.135(a)(2)(v) or of treated water SUVA for systems meeting the criterion in 40 CFR 141.135(a)(2)(vi).</p> <p>(6) The running annual average of source water alkalinity for systems meeting the criterion in 40 CFR 141.135(a)(2)(iii) and of treated water alkalinity for systems meeting the criterion in 40 CFR 141.135(a)(3)(i).</p> <p>(7) The running annual average for both TTHM and HAA5 for systems meeting the criterion in 40 CFR 141.135(a)(2)(iii) or (iv).</p> <p>(8) The running annual average of the amount of magnesium hardness removal (as CaCO₃, in mg/L) for systems meeting the criterion in 40 CFR 141.135(a)(3)(ii).</p> <p>(9) Whether the system is compliance with the particular alternative criterion in 40 CFR 141.135(a)(2) or (3).</p>

¹ The state may choose to perform calculations and determine whether the treatment technique was met, in lieu of having the system report that information.

This Page Intentionally Left Blank

**Protocol for Conducting Environmental Compliance Audits of
Public Water Systems under the Safe Drinking Water Act**

**Appendix N:
User Satisfaction Questionnaire and Comment Form**

This Page Intentionally Left Blank

User Satisfaction Survey
 (OMB Approval No. 1860.01)
 Expires 9/30/2001

We would like to know if this Audit Protocol provides you with useful information. This information will be used by EPA to measure the success of this tool in providing compliance assistance and to determine future applications and needs for regulatory checklists and auditing materials.

1. Please indicate which Protocol(s) this survey applies to:

Title: _____

EPA Document Number: _____

2. Overall, did you find the Protocol helpful for conducting audits:

Yes ___ No ___

If not, what areas of the document are difficult to understand?

3. How would you rate the usefulness of the Protocol(s) for conducting compliance audits on a scale of 1-5?

1 = not useful or effective, 3 = somewhat useful/effective, 5 = very useful/effective

Low		Medium		High		
1	2	3	4	5		Introduction Section
1	2	3	4	5		Key Compliance Requirements
1	2	3	4	5		Key Terms and Definitions
1	2	3	4	5		Checklist

4. What actions do you intend to take as a result of using the protocol and/or conducting the audit? Please check all that apply.

- Contact a regulatory agency
- Contact a compliance assistance provider (e.g., trade association, state agency, EPA)
- Contact a vendor
- Disclose violations discovered during the audit under EPA's audit Policy
- Disclose violations discovered under EPA's Small Business Policy
- Obtain a permit or certification
- Change the handling of a waste, emission or pollutant
- Change a process or practice
- Purchase new process equipment
- Install emission control equipment (e.g., scrubbers, wastewater treatment)
- Install waste treatment system (control technique)
- Implement or improve pollution prevention practices (e.g., source reduction, recycling)
- Improve organizational auditing program
- Institute an Environmental Management System
- Improve the existing Environmental Management System (e.g., improve training, clarify standard operating procedures, etc.)
- Other _____

5. What, if any, environmental improvements will result from the actions to be taken (check all that apply)?

- reduced emissions
- waste reduction
- reduced risk to human health and the environment due to better management practices
- reduced quantity and toxicity of raw materials
- water conservation
- energy conservation
- conserved raw materials
- conservation of habitat or other environmental stewardship practice: _____
- other: _____
- no environmental improvements are likely to result from the use of this document

6. How did you hear about this document?

- trade association
- state technical assistance provider
- EPA internet homepage or website
- document catalog
- co-worker or business associate
- EPA, state, or local regulator
- other (please specify) _____

7. In order to understand your response, we would like to know what function you perform with respect to environmental compliance and the size of your organization.

- | | | |
|-------------------------------------------------------------------------|---------------------------------------------------|----------------------------------------------------------------|
| <input type="checkbox"/> <u>Company Personnel</u> | <input type="checkbox"/> <u>Trade Association</u> | <input type="checkbox"/> <u>Compliance Assistance Provider</u> |
| <input type="checkbox"/> Environmental Auditor | <input type="checkbox"/> National | <input type="checkbox"/> EPA |
| <input type="checkbox"/> Corporate Level | <input type="checkbox"/> Regional | <input type="checkbox"/> State |
| <input type="checkbox"/> Plant-level | <input type="checkbox"/> Local | <input type="checkbox"/> State Small Business Assistance |
| <input type="checkbox"/> Legal | <input type="checkbox"/> Manager | <input type="checkbox"/> Local |
| <input type="checkbox"/> Environmental Manager | <input type="checkbox"/> Information Specialist | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Operator - (e.g., Pollution Control Equipment) | | |
| <input type="checkbox"/> Other: _____ | | |

- | | |
|------------------------------------------------------|-----------------------------------------------------------|
| <input type="checkbox"/> <u>Regulatory Personnel</u> | <input type="checkbox"/> <u>Vendor/Consultant</u> |
| <input type="checkbox"/> State | <input type="checkbox"/> Environmental Auditor |
| <input type="checkbox"/> Local | <input type="checkbox"/> Environmental Engineer/Scientist |
| <input type="checkbox"/> EPA | <input type="checkbox"/> Attorney |

8. How many employees are located at your facility (including full-time contractors?)

- 0 - 9 10 - 49 50 - 100 101-500 More than 500

Optional (Please Print)

Name: _____ Address: _____

Title: _____ City: _____ State: _____

Zip code: _____

Organization Name: _____

Phone: () _____ E-mail: _____

Please return all pages (1 thru 3) of this survey by folding pages 1 and 2 into page 3 and using the preprinted, pre-stamped address on the reverse side of page 3. If you have accessed this document electronically from one of EPA's web sites, simply e-mail this questionnaire to: satterfield.richard@epa.gov.

This Page Intentionally Left Blank