

# **Implementation Guidance for the Long-Term One Enhanced Surface Water Treatment Rule**

**Surface Water Systems Serving Less than 10,000  
Persons**

**Idaho Department of Environmental Quality  
May 2003**

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## Preface

The Long-Term One Enhanced Surface Water Treatment Rule (LT1ESWTR) was promulgated by EPA on January 14, 2002. The State of Idaho's adoption of this regulation will become final at the close of the 2003 Legislature. This rule imposes more stringent treatment requirements on systems that use surface water or ground water under the direct influence of surface water and serve less than 10,000 persons. The requirements are quite similar to those that were applied to larger systems by the 1998 Interim Enhanced Surface Water Treatment Rule (IESWTR). This guidance follows the same format as DEQ's guidance for the IESWTR.

This guidance is intended to provide DEQ drinking water staff and public water systems with an overview of the rule. For detailed rule language, the Code of Federal Regulations must be consulted.

Section One provides an outline of the rule and has a calendar of implementation activities and compliance dates.

Section Two deals with Disinfection Profiling Requirements and discusses the information that DEQ will need if the water system wishes to be excused from profiling.

Section Three addresses enhanced turbidity requirements.

Section Four describes the special primacy requirements the rule places on DEQ as primacy agency.

A number of national guidance products and other informational materials have been developed by EPA to assist the state and regulated water systems in complying with this rule and other related rules. A list of applicable information sources is provided in Appendix D. Many documents may be viewed and downloaded from the EPA Internet addresses listed below. Printed copies of informational materials may be requested from the Safe Drinking Water Hotline at 1-800-426-4791.

<http://www.epa.gov/safewater/mdbp/mdbp.html>

<http://www.epa.gov/safewater/mdbp/implement.html>

<http://www.epa.gov/safewater/mdbp/lt1eswtr.html>

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## Acronyms and Definitions

**CCP:** Composite Correction Program. A structured approach to analyzing the performance of filtration and disinfection facilities. This activity is commonly carried out by a water system in cooperation with a third party consultant. The LT1 rule requires water systems to undergo a CCP evaluation under specific circumstances, as described in Section 3 of this guidance. See Appendix A for a more detailed definition.

**DDBP Rule:** The *Stage 1 Disinfectants and Disinfection By-Products Rule*, promulgated by EPA in 1998. Often called simply the DBP rule.

**DBP:** Disinfection Byproducts. Compounds formed by the reaction of disinfectants with naturally occurring carbon compounds in source water.

**LT1:** Long Term One Enhanced Surface Water Treatment Rule. A brief and convenient acronym for the rule that is the subject of this guidance.

**MDBP Rules:** Microbial and Disinfection Byproduct Rules. A group of national drinking water regulations, authorized by the 1996 Safe Drinking Water Act, that deal with the simultaneous protection of public health from microbial contaminants and the byproducts formed when disinfection is used. LT1ESWTR is part of this group of regulations. The most important MDBP rules, their acronyms, and date of promulgation are as follows:

SWTR—Surface Water Treatment Rule, 1989

TCR—Total Coliform Rule, 1989

IESWTR—Interim Enhanced Surface Water Treatment Rule, 1998

Stage 1 DBP—Stage One Disinfectants and Disinfection Byproducts Rule, 1998

FBRR—Filter Backwash Recycling Rule, 2001

LT1ESWTR—Long Term One Enhanced Surface Water Treatment Rule, 2002

GWR—Ground Water Rule, expected 2003

Stage 2 DBP—Stage 2 Disinfectants/Disinfection Byproducts Rule, 2004

LT2ESWTR—Long Term Two Enhanced Surface Water Treatment Rule, 2004

## Section 1—Rule Overview and Compliance Timetable

**A. Systems affected by this rule.** This rule applies to all public drinking water systems that use surface water or ground water under the direct influence of surface water and serve fewer than 10,000 persons.

### **B. General Requirements.**

1. The definition of ground water under the direct influence of surface water (GWUDI) is modified to include *Cryptosporidium*.
2. All systems affected by the rule are required to achieve 2-log removal of *Cryptosporidium*. It is assumed that this requirement is being met when the system maintains compliance with the turbidity standards established by the rule.
3. For conventional or direct filtration systems, combined effluent turbidity standards are modified from those established in the Surface Water Treatment Rule. Turbidity must be less than .3 NTU in 95% of the measurements taken in a month and the turbidity level may not exceed 1 NTU.
4. Systems using conventional or direct filtration must conduct continuous turbidity monitoring (every fifteen minutes) for each individual filter. Systems that have only two filters may monitor combined effluent turbidity instead of individual filter turbidity.
5. If a system exceeds specified levels in individual filter turbidity, a series of follow-up actions are required.
6. Systems must prepare a disinfection profile (a graphical representation of *Giardia* inactivation measured weekly for a one year period) unless the system is excused from this requirement based on data showing disinfection byproduct levels less than 80% of the MCL established in the Stage 1 DBP rule.
7. Systems that are required to prepare a disinfection profile and later decide to make a significant change in their disinfection practices must calculate a benchmark of disinfection effectiveness and receive DEQ approval prior to making the change.
8. All finished water reservoirs on which construction began after March 1, 2002, must be covered.

Each of these requirements is explained in further detail in this guidance.

### C. Implementation Timetable

Date	Rule Requirement	References
March 15, 2002	Finished water storage reservoirs on which construction begins after 3/15/02 must be covered.	40 CFR 141.511 IDAPA 58.01.08.310
Summer 2002	Systems that wish to be excused from the disinfection profiling requirement should collect TTHM and HAA5 samples during warmest water temperature a point of maximum residence time in the distribution system.	40 CFR 141.531 IDAPA 58.01.08.310 This Guidance Sect. 2
July 1, 2003	Systems serving 500-9999 people must begin to develop a disinfection profile unless excused from this requirement by DEQ.	40 CFR 531-536 IDAPA 58.01.08.310 This Guidance, Sect. 2 EPA Profiling and Benchmarking Manual
January 1, 2004	Systems serving fewer than 500 people must begin to develop a disinfection profile unless excused from this requirement by DEQ.	Same as previous requirement
January 14, 2005	Systems must provide 2-log Crypto removal. Systems must meet new combined effluent turbidity limits. Systems must meet new individual filter turbidity monitoring requirements.	40 CFR 141.500-571 IDAPA 58.01.08.310 This Guidance, Sect. 3 EPA Turbidity Guidance Manual



## Section 2—Disinfection Profiling and Benchmarking

### A. Introduction

The Stage 1 Disinfectants and Disinfection Byproducts Rule (Stage 1 DBP) establishes limits on the concentration of total trihalomethanes and haloacetic acids in finished drinking water. Some surface water systems may find it necessary or desirable to change disinfection practices in order to minimize the occurrence of these substances. The Disinfection Profiling requirement of the LT1 rule is designed to make the water system operator aware of disinfection effectiveness on a weekly basis throughout the year. The period of lowest *Giardia* inactivation will serve as a benchmark when considering future changes in disinfection practices.

### B. Summary of Requirements

Profiling and benchmarking is a three-step process. A brief overview is provided here.

**Step 1—determining if a system must develop a profile.** Systems that wish to be excused from the disinfection profiling requirement must submit trihalomethane and haloacetic acid sample data to the state which demonstrates that levels of these substances are less than 80% of the MCLs established in the Stage 1 DBP Rule. The system must take these samples at the time of warmest water temperatures and at the point of longest residence time in the distribution system. Data collected at this time and in this manner after January 1, 1998 may be submitted. These samples are intended to provide a snapshot of DBP concentrations in the distribution system under worst case conditions. This one-time sampling event is strictly for the purpose of determining whether or not a system may be excused from disinfection profiling and is not a part of the monitoring requirements of the Stage 1 DBP rule.

Water systems that serve more than 500 persons must take these samples during the summer or early fall of 2002. If the system chooses not to take these samples, or if the samples are taken and results exceed 80% of the MCL for either class of compounds, disinfection profiling must begin by July 1, 2003.

Systems serving fewer than 500 persons have two seasons to collect DBP samples, since the deadline for beginning disinfection profiling for systems of this size is January 1, 2004. It is recommended that systems take the samples as soon as possible so that technical assistance can be provided if disinfection profiling is required.

**Step 2—developing the profile.** Systems that determine they must profile are required to begin by July 1, 2003 for systems serving more than 500 persons,

and by January 1, 2004 for systems serving fewer than 500 persons. The profile must characterize inactivation through the entire treatment process. Once per week on the same calendar day, for twelve consecutive months, the system must monitor the following parameters:

- a. Temperature of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow.
- b. If chlorine disinfection is used, the pH of the disinfected water at each residual disinfection concentration sampling point at peak hourly flow.
- c. The disinfectant contact time(s) of the water before or at the first customer and prior to each additional point of disinfection during peak hourly flow.

Inactivation is then calculated by the Concentration X Time (CT) method used for the *SWTR*. Surface water systems are already familiar with this methodology. A table describing the calculations used to determine *Giardia* inactivation is provided in 40 CFR 141.534. Weekly *Giardia* inactivation values are plotted graphically so that the system has a year-long profile of disinfection performance.

### **Step 3—calculating a disinfection benchmark and consulting with the state.**

If a water system decides in the future to make a significant change in its disinfection practices, it must calculate a benchmark and consult with the state. The system determines the average *G. lamblia* inactivation for each calendar month that data were profiled (one year minimum). This value is calculated by dividing the sum of weekly log inactivation by the number of values calculated for that month. The disinfection benchmark is the lowest average monthly inactivation for systems with one year of data. When consulting with the state, the system must submit its benchmark information, describe proposed changes to disinfection practices, and provide an analysis of how the changes in disinfection practice will affect current levels of disinfection effectiveness.

### **C. Reporting and Recordkeeping by the System**

The system must report results of trihalomethane and haloacetic acid sampling mentioned in Step 1 to DEQ as soon as possible after sampling takes place.

If a system is required to profile, it must maintain a record of the completed profile in graphical or other acceptable format and make it available for examination by DEQ during regularly scheduled sanitary surveys.

## Section 3—Turbidity Requirements

### 3.A. Combined Effluent Turbidity

LT1 tightens the turbidity standards established for conventional and direct filtration under the *Surface Water Treatment Rule*. **It is assumed that the requirement to achieve 2 log (99%) removal of Cryptosporidium is being met when these turbidity standards are maintained.** The following table compares the turbidity performance standards under the two rules:

Requirement	SWTR	IESWTR
Combined effluent turbidity measured every four hours must not exceed in 95% of monthly measurements...	.5 NTU	.3 NTU
Combined effluent turbidity must never exceed...	5.0 NTU	1.0 NTU

### 3.B. Individual Filter Turbidity Monitoring

LT1 requires systems using conventional or direct filtration to monitor individual filters continuously (at least every fifteen minutes). If a system has only two filters, combined filter effluent may be measured in lieu of individual filters. However, the purpose of this requirement is to monitor the performance of individual filters and to detect variations in turbidity that might be masked if only combined effluent turbidity is measured. For this reason, it is recommended that all systems monitor individual filter turbidity. **This monitoring is not considered part of the treatment technique requirements of this rule.**

1. If the turbidity of an individual filter (or the turbidity of combined filter effluent [CFE] for systems with only two filters that elect to monitor CFE in lieu of individual filters) exceeds 1.0 NTU in two consecutive recordings fifteen minutes apart, the system must:

Report to DEQ by the 10<sup>th</sup> of the following month and include the filter number(s), corresponding date(s), turbidity value(s) which exceeded 1.0 NTU, and the cause (if known) for the exceedance(s).

2. The following table describes responses the system must undertake if certain turbidity excursions occur. These actions are designed to diagnose the reasons for poor filter performance and suggest remedies that will help to prevent pathogen breakthrough. Definitions of comprehensive performance evaluation and comprehensive technical assistance are included in Appendix A of this guidance.

If a system was required to report to DEQ...	The system must...
<p>For three months in a row and turbidity exceeded 1.0 NTU in two consecutive recordings 15 minutes apart at the same filter (or CFE for systems with only two filters that monitor CFE in lieu of individual filters)</p>	<p>Conduct a self-assessment of the filter(s) within 14 days of the day the filter exceeded 1.0 NTU in two consecutive measurements for the third straight month unless a comprehensive performance evaluation was required (see below). Systems monitoring CFE must conduct a filter assessment on both filters. The self-assessment consists of at least the following components: Assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report. If a self-assessment is required, record the date that it was triggered and the date that it was completed.</p>
<p>For two months in a row and turbidity exceeded 2.0 NTU in two consecutive recordings fifteen minutes apart at the same filter (or CFE for systems with only two filters that monitor CFE in lieu of individual filters).</p>	<p>Arrange to have a comprehensive performance evaluation (CPE) conducted by DEQ, or a third party approved by DEQ, not later than 60 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month. If DEQ or an approved party has completed a CPE within the 12 prior months, or the system and DEQ are jointly participating in an ongoing Comprehensive Technical Assistance (CTA) project at the system, a new CPE is not required. If conducted, the CPE must be completed and submitted to DEQ no later than 120 days following the day the filter exceeded 2.0 NTU in two consecutive measurements for the second straight month.</p>

### 3.C. Reporting and Recordkeeping by the Water System

All reporting and recordkeeping requirements imposed by LT1 are in addition to the requirements already established under the *Surface Water Treatment Rule*.

The system must keep a record of individual filter turbidity monitoring results for at least three years. Because of the large number of measurements, this record may be stored in electronic format.

The following table describes reporting requirements imposed by LT1.

<b>Requirement</b>	<b>Information to Report</b>	<b>Frequency</b>
Combined Filter Effluent Measurements	<ol style="list-style-type: none"> <li>1) Total number of filtered water turbidity measurements taken during the month.</li> <li>2) The number and percentage of filtered water turbidity measurements which are less than or equal to the 95<sup>th</sup> percentile system established for the system.</li> <li>3) The date and value of any turbidity measurements which exceeded the maximum turbidity value for the system.</li> </ol>	<p>By the 10<sup>th</sup> of the following month.</p> <p>By the 10<sup>th</sup> of the following month.</p> <p>By the 10<sup>th</sup> of the following month.</p>
Individual Filter Turbidity Requirements	<ol style="list-style-type: none"> <li>1) Verification that the system conducted individual filter turbidity monitoring during the month.</li> <li>2) The filter number(s) and corresponding date(s) and the turbidity values that exceeded 1.0 NTU during the month, but only if two consecutive measurements exceeded 1.0 NTU.</li> <li>3) If a self-assessment is required, the date that it was triggered and the date that it was completed.</li> <li>4) If a CPE is triggered, a statement that the CPE is required and the date that it was triggered.</li> <li>5) A copy of the completed CPE Report.</li> </ol>	<p>By the 10<sup>th</sup> of the following month.</p> <p>By the 10<sup>th</sup> of the following month.</p> <p>By the 10<sup>th</sup> of the following month (or 14 days after the self-assessment was triggered only if the self-assessment was triggered during the last four days of the month).</p> <p>By the 10<sup>th</sup> of the following month.</p> <p>Within 120 days after the CPE was triggered.</p>

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## Section 4—Special Primacy Requirements

### 4.A. Introduction

LT1 imposes certain requirements on DEQ as primacy agency. DEQ must describe the approach it will take in making regulatory decisions. The Interim Enhanced Surface Water Treatment Rule imposed a requirement that DEQ conduct a sanitary survey of all surface water systems at least once every three years for community systems and every five years for non-community systems. A discussion of sanitary survey requirements is repeated in this guidance because many systems affected by LT1 will have no particular reason to consult the IESWTR guidance. Requirements concerning comprehensive performance evaluations of filtration systems that exceed turbidity standards are outlined. A description of recordkeeping requirements is also provided.

### 4.B. Sanitary Surveys

**General**—Section 302 of the *Idaho Rules for Public Water Systems* establishes the requirement that DEQ conduct a sanitary survey of all community surface water and GWUDI systems every three years. Non-community systems must be surveyed every five years. See Appendix B of this Guidance for selected excerpts from the *Idaho Rules* pertaining to sanitary surveys. A sanitary survey is defined (IDAPA 58.01.08.003) as being comprised of eight elements:

1. Source
2. Treatment
3. Distribution system
4. Finished water storage
5. Pumps, pump facilities, and controls
6. Monitoring and reporting and data verification
7. System management and operation
8. Operator compliance with state requirements

These elements are described in detail in the *EPA Sanitary Survey Manual* (see Appendix D). If a water system has developed a disinfection profile, DEQ will examine the profile as part of the sanitary survey for that system. The elements of the survey may be examined in stages, so long as the entire survey is completed within the required time frame for each type of system.

**System response required**— Section 302 of the *Idaho Rules* also establishes the requirement that a water system respond in writing within 45 days of receiving a sanitary survey report describing how and on what schedule the system will respond to significant deficiencies noted in the report. Significant deficiencies are defined (IDAPA 58.01.08.003) as “any defect in a system’s design, operation, maintenance, or administration, as well as any failure or

malfunction of any system component, that the State determines to cause, or have potential to cause, risk to health or safety, or that could affect the reliable delivery of safe drinking water.”

**Significant deficiencies must be corrected**—Finally, Section 302 establishes that a failure by the system to correct deficiencies that are under the control of the public water system and its governing body will constitute a violation of the *Idaho Rules*. As such, administrative penalties and other remedies may be imposed by the state if the system does not comply with these requirements. It is DEQ’s responsibility to track and follow up on efforts by the system to meet the schedule for correcting deficiencies.

**Discussion of significant deficiencies**—The general definition of a significant deficiency given in the *Idaho Rules for Public Drinking Water Systems* was quoted on the preceding page.

EPA’s *Sanitary Survey Manual* (Pages 4-5 to 4-7) describes some common deficiencies that may be significant for any given water system. These deficiencies and others from additional sources are compiled in Appendix B. This reference list may be helpful to an inspector when weighing the importance of a particular deficiency, but it is not intended to be prescriptive in nature. Questions that might be asked when deciding whether or not a deficiency is significant are:

- \* *Does the deficiency meet the state definition given above?*
- \* *Does the deficiency cause the potential for contaminants to be introduced to the drinking water?*
- \* *If left uncorrected, will the deficiency cause the potential for the introduction of contaminants at some point in the future?*
- \* *Does the deficiency affect treatment in an unacceptable manner?*
- \* *Does the deficiency pose risks to the safety of the public or operators?*

It is understood that a specific deficiency may be more serious for one water system than it is for another, given the complexity of the system, differences in treatment methods and control systems, and other site-specific factors. Professional judgement by the person conducting the sanitary survey will prevail in such matters. DEQ will err on the side of caution with respect to public health and safety.

**Outstanding performance**—The *IESWTR* allows the state to reduce the frequency of sanitary surveys for community water systems from three years to five, if the water system has demonstrated “outstanding performance.” The following criteria will be used to make this decision:



1. No significant deficiencies noted in the current survey. A current survey is any sanitary survey conducted after 1995 that addressed all eight of the elements described above.
2. No MCL violations since the last survey, unless it can be shown that any MCL violations that do exist are unrelated to deficiencies in system construction, treatment practices, operation, or management. An example of the latter situation would be a chemical MCL exceedance due to previously undetected contamination in a water source.
3. No monitoring or reporting violations during the past five years.
4. No waterborne disease outbreaks attributable to the system during the past five years.
5. Evidence of expert operation, such as;
  - a. Active cross-connection control program
  - b. O & M manuals current and accessible
  - c. Operator up to date on training and other certification requirements
  - d. System meeting exceptional turbidity performance standards regularly

**Standards for service providers**—Should it become necessary or desirable to use third party service providers to conduct sanitary surveys, these providers will be expected to complete surveys in accordance with this Guidance and the *EPA Sanitary Survey Manual*. DEQ has recently adopted a policy (DW-00-02, effective 8/10/00) which outlines the requirements for third parties seeking to become an “agent approved by the state” for the purpose of performing sanitary surveys.

#### **4.C. Composite Correction Program (CCP)**

**General**—Section 003 of the *Idaho Rules for Public Water Systems* provides a definition of the composite correction program and its constituent elements. Section 303 states that DEQ may require a system using surface water or GWUDI to arrange for a CCP to be performed for the purpose of finding and correcting deficiencies in water treatment or distribution. Failure to implement performance improvement factors identified in the course of the CCP is a violation of the *Idaho Rules*.

**EPA Guidance**—The *CCP Manual* (see Appendix D) describes the process to be followed in carrying out a CCP evaluation.

**Service Providers**—A water system required to conduct a CCP evaluation may obtain assistance from various service providers. These may consist of engineering firms or other qualified water industry professionals.

**CCP Findings**—A copy of the CCP findings report must be provided to DEQ for use in tracking system progress in implementing performance improvement opportunities identified during the CCP evaluation.

#### **4.D. Evaluating a “more representative data set” for purposes of determining the need to prepare a disinfection profile.**

A water system is allowed by 40 CFR 141.530-536 to request that the state consider a “more representative data set” when deciding whether or not the system must prepare a disinfection profile. DEQ will evaluate any such requests on a case by case basis. This application will only be considered if a data set exists or can be collected within the time frame established in the rule (See Section 2 of this Guidance). In general, the system must demonstrate that treatment or other practices have been modified in such a way that original monitoring results are no longer reflective of the system’s potential to create disinfection byproducts.

#### **4.E. Calculation of Virus Inactivation for Systems using Chloramines or Ozone**

DEQ will use the following approach in determining virus inactivation for systems using these disinfectants:

**For chloramines**— Systems that use chlorine prior to adding ammonia may use Table E-13 of the *SWTR Guidance Manual* (see Appendix D). Systems that add ammonia first, or add the two chemicals concurrently, may use the protocol in Appendix G of the *SWTR Manual*. In the unlikely event that a system wishes to suggest an alternative means for determining virus inactivation, the system must provide a scientifically defensible rationale for the proposed method.

**For ozone**—Systems using ozone may use Table E-11 of the *SWTR Guidance Manual* to determine virus inactivation. As above, an alternative method may be proposed and defended by the water system.

#### **4.F. Consultation between DEQ and PWS’s Planning to Modify their Disinfection Practices**

**General**—If a water system is required to develop a disinfection profile and the system subsequently decides to change its disinfection practices, it must first consult with the state (DEQ), pursuant to 40 CFR 141.542. The purpose of this requirement is to encourage the system and DEQ to work together to ensure that all potential water quality trade-offs are addressed and any changes in

disinfection practice do not result in a decrease in microbial protection. Changes subject to this requirement include:

- a. Changing the point of disinfection application
- b. Changing the disinfectant
- c. Changing the disinfection process
- d. All other changes considered significant by the state, such as changes in pH, pre-treatment strategies, source water, contact basin dynamics, etc.)

Because the above list is not all-inclusive, any system that is required to develop a disinfection profile and subsequently decides to make a change in its disinfection practices must notify DEQ so that the agency can determine whether or not the proposed change is significant and will require consultation between the system and the state.

**Consultation**—DEQ and the water system will weigh the following factors in their consultation:

- a. Why the system is proposing a change in disinfection practice
- b. Evaluation of positive and negative impacts of the change
- c. Calculation of an alternative benchmark
- d. Examination of all known alternatives to the proposed change.

The goal of this consultation will be to ensure that any changes made by the system will represent the best available balance between microbial protection and disinfection byproduct formation potential.

#### **4.G. Approval of Alternative Filtration Technologies**

DEQ will use the *Consensus Protocol for Evaluation and Acceptance of Alternate Surface Water Filtration Technologies in Small system Applications*, developed by the Western States Workgroup and finalized in April 1992. This protocol involves the following steps:

1. System Component Evaluation for Leaching of Contaminants.
2. Demonstration of *Giardia (and Cryptosporidium)* Removal Performance
3. On-Site Demonstration of Performance

This methodology has served the State well since implementation of the *SWTR*. Technologies that have been evaluated and approved under the joint EPA/NSF Technology Validation process will also be acceptable for use in Idaho. It is the intent of DEQ to require only the minimum information necessary to make a good public health decision about the use of alternative technologies. To this end, technologies that have been approved for use in surface water and GWUDI systems in other states will also be allowed in Idaho and will not be required to

repeat the testing that was performed elsewhere, **with the exception** that the on-site performance demonstration, as described in the *Western States Protocol*, will not be waived.

Turbidity standards that must be met 95% of the time will be established by the state for each approved technology. The state will also set a turbidity standard that must not be exceeded at any time. A copy of the turbidity standards determined by the state for a given technology will be provided to the water system.

#### **4.H. Recordkeeping by DEQ**

DEQ will keep the following records with respect to the *IESWTR*, as required by 40 CFR 142.14:

**1. Records of turbidity measurements submitted by the water system must be kept in the system file for a minimum of one year.** This information must be set forth in a form that makes possible comparison with the turbidity limits specified in the rule. DEQ will use an existing form that was developed for the *SWTR*, as modified to reflect the tighter standards established by the LT1 Rule. An example of this form is included as Appendix C of this guidance. Because of the trend toward automatic logging of turbidity data, especially among larger systems, use of alternative formats is acceptable as long as equivalent information is provided and it is possible to compare the turbidity readings to the limits established in the Surface Water Treatment Rule, the Interim Enhanced Surface Water Treatment Rule, and the LT1 Enhanced Surface Water Treatment Rule.

**2. Records of disinfectant residual measurements and other parameters necessary to document disinfection effectiveness must be kept in the system file for a minimum of one year.**

**3. The following types of records must be kept in the system file on a permanent basis:**

- a. Any case-by-case, system-specific regulatory decisions made by DEQ.
- b. Records of consultations between a system and DEQ regarding changes in disinfection practice, including the status of the consultation.
- c. Records of decisions that systems using alternative filtration technologies can consistently achieve a 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts, 99.99 percent removal and/or inactivation of viruses, and 99 percent removal of *Cryptosporidium* oocysts. The decision must include the state-determined turbidity standards for the system. A copy of this decision must be provided to the water system.

d. Records of systems that are required to perform filter self-assessments, and a CCP or CPE evaluation alone. (See Section 3 of this Guidance).

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## **Appendix A— Selected Excerpts from Idaho Rules Sections 003, 302 and 303**

### **003. Definitions**

**Composite Correction Program (CCP).** A systematic approach to identifying opportunities for improving the performance of water treatment and implementing changes that will capitalize on these opportunities. The CCP consists of two (2) elements:

a. **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. The CPE must consist of at least the following components: assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of a CPE report.

b. **Comprehensive Technical Assistance (CTA).** The implementation phase that is carried out if the CPE results indicate improved performance potential. During the CTA phase, the system must identify and systematically address plant-specific factors. The CTA consists of follow-up to the CPE results, implementation of process control priority setting techniques, and maintaining long term involvement to systematically train staff and administrators.

**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. The sanitary survey will include, but is not limited to, the following elements:

- a. Source;
- b. Treatment;
- c. Distribution system;
- d. Finished water storage;
- e. Pumps, pump facilities, and controls;
- f. Monitoring and reporting and data verification;
- g. System management and operation; and
- h. Operator compliance with state requirements.

**Significant Deficiency.** Any defect in a system's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that the State determines to cause, or have potential to cause, risk to health or safety, or that could affect the reliable delivery of safe drinking water.

**302. Sanitary Surveys.** The Department shall conduct a sanitary survey of all public water systems which use surface water or ground water under the direct influence of surface water.

**01. Frequency.** For noncommunity water systems a sanitary survey shall be conducted every five (5) years. For community water systems a sanitary survey shall be conducted every three (3) years, except that a community water system that has been determined to have outstanding performance, according to criteria established by the Department, may have a sanitary survey conducted every five (5) years.

**02. Report.** A report describing the results of the sanitary survey will be provided to the water system.

**03. Response Required.** A water system must respond in writing not later than forty-five (45) days after receipt of the sanitary survey report describing how and on what schedule the system will address significant deficiencies identified in the survey.

**04. Violation.** Failure to address significant deficiencies identified in a sanitary survey that are within the control of the public water system and its governing body shall constitute a violation of these rules.

### **303. Composite Correction Program (CCP).**

The Department may require a public water system to conduct a composite correction program, as defined in Section 003 of these rules, for the purpose of identifying and correcting deficiencies in water treatment and distribution. Failure to implement the performance improvement factors identified through the CCP constitutes a violation of these rules.



## ***Appendix B—List of Potentially Significant Deficiencies That May Be Noted during a Sanitary Survey***

The following deficiencies have the potential to meet the state definition of a significant deficiency. This list is not intended to be prescriptive. The inspector in the field will have the final word on whether or not a particular deficiency is significant. However, each of these deficiencies has the potential to be significant and referring to this list may assist the inspector in making this decision.

### **Source**

Location of intake near pollution source  
Well construction inadequate or in deteriorated condition  
Spring collection facilities inadequate or in deteriorated condition

### **Treatment**

- \* The hatch to a pressure filter has not been opened on a yearly basis to clean the media and to check for media loss and the condition of the underdrain system
- \* Filter does not have adequate depth of media (e.g. less than 24 inches)
- \* No standard operating procedure for taking a filter out of service for backwashing, for performing the backwash, or returning the filter to service
- \* No process control plan for coagulant addition
- \* Inadequate application of treatment chemicals
- \* Chemical feed rates not adjusted for varying raw water quality conditions or changes in plant flow rate
- \* Inadequate disinfection CT
- \* Unsafe chemical storage

### **Distribution System**

TCR sampling plan not representative of the distribution system  
Negative pressures at any time  
System not flushed periodically  
No disinfectant residual, or HPC levels greater than 500/ml, repeatedly, at same sites  
Inadequate monitoring of disinfectant residual, when required  
Inadequate cross-connection controls, either at the treatment facility or in the distribution system (or failure to have a cross-connection control program)  
Unacceptable system leakage which could result in entrance of contaminants  
System plans unavailable or outdated  
Valve locations unknown  
Valves not exercised regularly or known to be inoperable

### **Finished Water Storage**

Inadequate internal cleaning and maintenance of storage tank  
Improper venting of tank  
Lack of proper screening of overflow pipe and drain  
Inadequate roofing (e.g. holes in the storage tank, improper hatch construction)

### **Pumps, Pump Facilities and Controls**

Ponding of water in pump housing  
Inadequate pump capacity  
Lack of redundant mechanical components  
Electrical hazards

### **Monitoring/Reporting/Data Verification**

Failure to properly monitor water quality  
Failure of system operator to address customer complaints regarding water quality or quantity  
TCR sampling plan not available or not being followed  
Chronic TCR coliform detections with inadequate remediation

### **Water System Management/Operation**

Lack of properly trained or licensed staff as required by the state  
Lack of emergency response plan  
Failure to meet water supply demands or interruptions to service (inadequate pump capacity, unreliable water source, lack of auxiliary power)  
Inadequate follow-up to deficiencies not in previous sanitary surveys  
Spare parts inventory inadequate  
Lack of accessible contact list w/phone numbers for emergency repairs or troubleshooting  
Evidence of poor or infrequent communication between operator and system managers

### **Operator Compliance with State Requirements**

Operator does not have the correct level of certification as required by regulation

## ***Appendix C—Sample Turbidity Monitoring Form with Instructions***

*The following form has long been used to report treatment technique performance under the SWTR. The standards for turbidity have been tightened, otherwise the form is unchanged.*

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## **Appendix D—Additional Sources of Information about this Rule**

National guidance products are under development for this rule. The best place to access these documents as they become available is on the Internet at the web addresses given in the preface to this guidance. Listed below are existing publications that are of general use to surface water systems. Some of the EPA guidance documents were developed for the *Interim Enhanced Surface Water Treatment Rule*, and are therefore oriented toward larger systems and the more stringent regulations that apply to them. However, the technical background provided by these documents applies just as well to smaller surface water systems. This appendix will be updated as new materials dealing specifically with LT1 become available.

***Guidance Manual for Conducting Sanitary Surveys of Public Water Systems; Surface Water and Ground Water Under the Direct Influence (GWUDI) of Surface Water. EPA 815-R-99-016, April 1999. [Sanitary Survey Guidance Manual]***

***Guidance Manual for Compliance with the Interim Enhanced Surface Water Treatment Rule: Turbidity Provisions. EPA 815-R-99-010, April 1999. [Turbidity Guidance Manual]***

***Disinfection Profiling and Benchmarking Guidance Manual. EPA 815-R-99-013, August 1999. [Profiling and Benchmarking Manual]***

***Optimizing Water Treatment Plant Performance Using the Composite Correction Program. EPA 625/6-91/027 Revised August 1998. [CCP Manual]***

***Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources. US EPA, 1991 [SWTR Guidance Manual]***