Annex A

TITLE 25. ENVIRONMENTAL PROTECTION

PART I. DEPARTMENT OF ENVIRONMENTAL PROTECTION

Subpart C. PROTECTION OF NATURAL RESOURCES

ARTICLE II. WATER RESOURCES

CHAPTER 109. SAFE DRINKING WATER

Subchapter A. GENERAL PROVISIONS

§ 109.1. Definitions.

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***Groundwater*—Water that is located within the saturated zone below the water table and is available to supply wells and springs.**

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***Log inactivation*—A measure of the amount of viable microorganisms that are rendered non-viable during disinfection processes and is defined as:**

$$\text{Log inactivation} = \log\left(\frac{N_o}{N_D}\right)$$

Where,

N_o = Initial concentration of viable microorganisms

N_D = Concentration of viable microorganisms after disinfection

Log = Logarithm to base 10

Log inactivation is related to percent inactivation, defined as:

$$\text{Percent inactivation} = \left(1 - \frac{N_D}{N_o}\right) * 100$$

Common log-inactivation values and corresponding percent inactivation values include:

Log Inactivation	Percent Inactivation
0.5-log	68.4%
1.0-log	90.0%
1.5-log	96.8%
2.0-log	99.0%
2.5-log	99.7%
3.0-log	99.9%
4.0-log	99.99%

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***Log removal*—A measure of the physical removal of a targeted contaminant or disease-causing microorganism (or its surrogate) during water treatment processes and is defined as:**

$$\text{Log removal} = \log\left(\frac{N_o}{N_R}\right)$$

Where,

N_o = Initial concentration of targeted contaminant or disease-causing microorganism (or its surrogate)

N_R = Concentration of targeted contaminant or disease-causing microorganism (or its surrogate) after removal

Log = Logarithm to base 10

Log removal is related to percent removal, defined as:

$$\text{Percent removal} = \left(1 - \frac{N_R}{N_o}\right) * 100$$

Common log-removal values and corresponding percent removal values include:

Log Removal	Percent Removal
0.5-log	68.4%
1.0-log	90.0%
1.5-log	96.8%
2.0-log	99.0%
2.5-log	99.7%
3.0-log	99.9%
4.0-log	99.99%

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***Log treatment*—A measure of the removal or inactivation, or Department-approved combination of removal and inactivation, of a targeted contaminant or disease-causing microorganism (or its surrogate) during water treatment processes and is defined as:**

Log treatment = Log removal + Log inactivation

Or,

$$\text{Log treatment} = \log\left(\frac{N_o}{N_T}\right)$$

Where,

N_o = Initial concentration of a targeted contaminant or disease-causing microorganism (or its surrogate)

N_T = Concentration of a targeted contaminant or disease-causing microorganism (or its surrogate) after treatment

Log = Logarithm to base 10

Log treatment is related to percent treatment, defined as:

$$\text{Percent treatment} = \left(1 - \frac{N_T}{N_o}\right) * 100$$

Common log treatment values and corresponding percent treatment values include:

Log Treatment	Percent Treatment
0.5-log	68.4%
1.0-log	90.0%
1.5-log	96.8%
2.0-log	99.0%
2.5-log	99.7%
3.0-log	99.9%

4.0-log **99.99%**

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***Microorganism*—Any of a number of unicellular, multicellular or colonial bacteria, fungi, protozoa, archaea or viruses whose individuals are too small to be seen by the human eye without magnification.**

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§ 109.5. Organization of chapter.

(a) This subchapter and Subchapter H (relating to laboratory certification) apply to all public water systems.

(b) Subchapters B—G and I apply to public water systems, except bottled water and vended water systems, retail water facilities and bulk water hauling systems, unless provisions in those subchapters are specifically referenced in Subchapter J (relating to bottled water and vended water systems, retail water facilities and bulk water hauling systems).

(c) Subchapter J applies exclusively to bottled water and vended water systems, retail water facilities and bulk water hauling systems.

(d) Subchapter K (relating to lead and copper) applies to community and nontransient noncommunity water systems.

(e) Subchapter M (relating to additional requirements for groundwater sources) applies to all public water systems that use groundwater, excluding those systems that combine all of

their groundwater with surface water or with groundwater under the direct influence of surface water prior to treatment.

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Subchapter B. MCLs, MRDLs OR TREATMENT TECHNIQUE REQUIREMENTS

§ 109.202. State MCLs, MRDLs and treatment technique requirements.

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(c) *Treatment technique requirements for pathogenic bacteria, viruses and protozoan cysts.* A public water system shall provide adequate treatment to reliably protect users from the adverse health effects of microbiological contaminants, including pathogenic bacteria, viruses and protozoan cysts. The number and type of treatment barriers and the efficacy of treatment provided shall be commensurate with the type, degree and likelihood of contamination in the source water.

(1) A public water supplier shall provide, as a minimum, continuous filtration and disinfection for surface water and GUDI sources. The treatment technique **[shall]** **must** provide at least 99.9% removal and inactivation of Giardia lamblia cysts, and at least 99.99% removal and inactivation of enteric viruses. Beginning January 1, 2002, public water suppliers serving 10,000 or more people shall provide at least 99% removal of Cryptosporidium oocysts. Beginning January 1, 2005, public water suppliers serving fewer than 10,000 people shall provide at least 99% removal of Cryptosporidium oocysts. The Department, depending on source water quality conditions, may require additional treatment as necessary to meet the requirements of this chapter and to protect the public health.

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(2) A community public water system shall provide continuous disinfection **and comply with Subchapter M (relating to additional requirements for groundwater sources)** for groundwater sources.

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Subchapter C. MONITORING REQUIREMENTS

§ 109.301. General monitoring requirements.

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(8) *Monitoring requirements for public water systems that obtain finished water from another public water system.*

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(vii) A public water supplier that obtains finished water from another permitted public water system using groundwater shall comply with Subchapter M (relating to additional requirements for groundwater sources).

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§ 109.304. Analytical requirements.

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(c) For the purpose of determining compliance with the monitoring and analytical requirements established under this subchapter **[and],** Subchapter K **and Subchapter M** (relating to lead and copper**; and additional requirements for groundwater sources**), the Department will consider only samples analyzed by a laboratory certified by the Department, except that measurements for turbidity, fluoridation operation, residual disinfectant concentration, temperature, pH, alkalinity,

orthophosphates, silica, calcium, conductivity, daily chlorite, and magnesium hardness may be performed by a person meeting the requirements of § 109.704 (relating to operator certification).

Subchapter D. PUBLIC NOTIFICATION

§ 109.407. General public notification requirements.

(a) *Violation categories and other situations requiring a public notice.* A public water supplier shall give public notice for the following circumstances:

(1) Failure to comply with an applicable State primary MCL or MRDL in Subchapter B (relating to MCLs, MRDLs or treatment technique requirements).

(2) Failure to comply with a prescribed treatment technique requirement in Subchapter B, G **[or]**, K **or M [(relating to MCLs, MRDLs or treatment technique requirements; system management responsibilities; and lead and copper)]**.

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§ 109.408. Tier 1 public notice—form, manner and frequency of notice.

(a) *General violation categories and other situations requiring a Tier 1 public notice.* A public water supplier shall provide Tier 1 public notice for the following circumstances:

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(8) **Detection of *E. coli* in source water samples as specified in §§ 109.1303 and 109.1304 (relating to triggered monitoring requirements for groundwater sources; and assessment source water monitoring).**

(9) A breakdown in treatment for groundwater sources as specified in § 109.1307(a)(1)(ii).

(10) Other violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure, as determined by the Department on a case-by-case basis.

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§ 109.409. Tier 2 public notice—form, manner and frequency of notice.

(a) *General violation categories and other situations requiring a Tier 2 public notice.* A public water supplier shall provide Tier 2 public notice for the following circumstances:

(1) All violations of the primary MCL, MRDL **[and],** treatment technique requirements **and failure to take corrective action** in Subchapter B, G **[or],** K **or M [(relating to MCLs, MRDLs or treatment technique requirements; system management responsibilities; and lead and copper)]**, except **[where]** **when** a Tier 1 notice is required under § 109.408 (relating to Tier 1 public notice—form, manner and frequency of notice) or when the Department determines that a Tier 1 notice is required. The tier assignment for fluoride is not incorporated by reference. Under § 109.202(d) (relating to MCLs, MRDLs or treatment technique requirements), a public water system shall comply with the primary MCL for fluoride of 2 mg/L. As such, a public water supplier shall provide Tier 2 public notice for violation of the primary MCL for fluoride.

(2) Violations of the monitoring requirements in Subchapter C **[(relating to monitoring requirements) or],** Subchapter K **or Subchapter M (relating to monitoring requirements; lead and copper; and additional requirements for groundwater sources)**, when the Department determines that a Tier 2 rather than a Tier 3 public notice is required, taking into account potential health impacts and persistence of the violation.

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§ 109.410. Tier 3 public notice—form, manner and frequency of notice.

(a) *General violation categories and other situations requiring a Tier 3 public notice.* A public water supplier shall provide Tier 3 public notice for the following circumstances:

(1) Monitoring violations under Subchapter C **[or], Subchapter** K **or Subchapter M** (relating to monitoring requirements; **[and]** lead and copper**; and additional requirements for groundwater sources**), except when a Tier 1 notice is required under § 109.408 (relating to Tier 1 public notice—form, manner and frequency of notice) or **[where] when** the Department determines that a Tier 2 notice is required.

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§ 109.417. Special notice for significant deficiencies by noncommunity water systems.

(a) In addition to the applicable public notification requirements of this subchapter, a noncommunity water system that receives notice from the Department under § 109.1302(c)(2) (relating to groundwater systems with significant deficiencies or source water *E. coli* contamination) of a significant deficiency shall inform the public served by the water system in a manner approved by the Department of any significant deficiency that has not been corrected within 12 months of being notified by the Department, or earlier if directed by the Department. The system shall continue to inform the public annually until the significant deficiency is corrected. The information must include:

(1) The nature of the significant deficiency and the date the significant deficiency was identified by the Department.

(2) The Department-approved plan and schedule for correction of the significant deficiency, including interim measures, progress to date, and any interim measures completed.

(3) For systems with a large proportion of non-English speaking consumers specified in § 109.411(c)(2), information in the appropriate languages regarding the importance of the notice or a telephone number or address where consumers may contact the system to obtain a translated copy of the notice or assistance in the appropriate language.

(b) If directed by the Department, a noncommunity water system with significant deficiencies that have been corrected in accordance with § 109.1302(c)(1) shall inform its customers of the significant deficiencies, how the deficiencies were corrected, and the dates of correction.

Subchapter E. PERMIT REQUIREMENTS

§ 109.503. Public water system construction permits.

(a) *Permit application requirements.* An application for a public water system construction permit shall be submitted in writing on forms provided by the Department and shall be accompanied by plans, specifications, engineer's report, water quality analyses and other data, information or documentation reasonably necessary to enable the Department to determine compliance with the act and this chapter. The Department will make available to the applicant the **"**Public Water Supply Manual**"**, available from the Bureau of Water Supply and Community Health, Post Office Box 8467, Harrisburg, Pennsylvania 17105 which contains acceptable design standards and technical guidance. Water quality analyses shall be conducted by a laboratory certified under this chapter.

(1) *General requirements.* An application **[shall] must** include:

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(iii) *Information describing new sources.* The Department may accept approval of an out-of-State source by the agency having jurisdiction over drinking water in that state if the supplier submits adequate proof of the approval and the agency's standards are at least as stringent as this chapter. Information describing sources **[shall] must** include:

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(B) An evaluation of the quality of the raw water from each new source. This clause does not apply when the new source is finished water obtained from an existing permitted community water system unless the Department provides written notice that an evaluation is required. The evaluation **[shall] must** include analysis of the following:

(I) For groundwater sources, VOCs for which MCLs have been established by the EPA under the National Primary Drinking Water Regulations in 40 CFR 141.61(a) (relating to maximum contaminant levels for organic contaminants). Vinyl chloride monitoring is required only if one or more of the two-carbon organic compounds specified under § 109.301(5)(i) (relating to general monitoring requirements) are detected. Samples for VOCs shall be collected in accordance with § 109.303(d) (relating to sampling requirements).

(II) Except for asbestos, IOCs for which MCLs have been established by the EPA under the National Primary Drinking Water Regulations in 40 CFR 141.62 (relating to maximum contaminant levels for inorganic contaminants). The new source shall be monitored for asbestos if the Department has reason to believe the source water is vulnerable to asbestos contamination.

(III) Lead.

(IV) Copper.

(V) Total coliform concentration and, if total coliform-positive, analyze for **[fecal coliform concentration]** **the presence of *E. coli*.**

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§ 109.505. Requirements for noncommunity water systems.

A noncommunity water system shall obtain a construction permit under § 109.503 (relating to public water system construction permits) and an operation permit under § 109.504 (relating to public water system operation permits), unless the noncommunity water system satisfies paragraph (1) or (2). The Department retains the right to require a noncommunity water system that meets the requirements of paragraph (1) or (2) to obtain a construction and an operation permit, if, in the judgment of the Department, the noncommunity water system cannot be adequately regulated through standardized specifications and conditions. A noncommunity water system which is released from the obligation to obtain a construction and an operation permit shall comply with the other requirements of this chapter, including design, construction and operation requirements described in Subchapters F and G (relating to design and construction standards; and system management responsibilities).

(1) A noncommunity water system which holds a valid permit or license issued after December 8, 1984, under one or more of the following acts satisfies the permit requirement under the act. The licensing authority will review the drinking water facilities under this chapter when issuing permits under the following acts:

(i) The act of May 23, 1945 (P. L. 926, No. 369) (35 P. S. § § 655.1—655.13).

(ii) The Seasonal Farm Labor Act (43 P. S. § § 1301.101—1301.606).

(iii) The Public Bathing Law (35 P. S. § § 672—680d).

(2) A noncommunity water system not covered under paragraph (1) is not required to obtain a construction and an operation permit if it satisfies the following specifications and conditions:

(i) The sources of supply for the system are groundwater sources **[requiring treatment no greater than disinfection to provide water of a quality that meets the primary MCLs established under Subchapter B (relating to MCLs, MRDLs or treatment technique requirements).]** **and:**

(A) Require treatment no greater than disinfection to provide water of a quality that meets the primary MCLs established under Subchapter B (relating to MCLs, MRDLs or treatment technique requirements).

(B) The treatment provided is not required under § 109.1302 (relating to treatment technique requirements) to meet at least 4-log treatment of viruses.

(ii) The water supplier files a brief description of the system, including raw source quality data, on forms acceptable to the Department. Amendments to the system description shall be filed when a substantial modification is made to the system. Descriptions of new systems or modifications may be filed prior to construction if the water supplier desires technical assistance, but shall be filed within 30 days of initiation of operation of the system or modification.

(3) A noncommunity water system which satisfies the requirements of paragraphs (1) and (2) shall provide the Department with the following information describing new sources, including

an evaluation of the quality of the raw water from each new source. Water quality analyses shall be conducted by a laboratory certified under this chapter. This paragraph does not apply when the new source is finished water obtained from an existing permitted community water system or an existing permitted or approved noncommunity water system unless the Department provides written notice that one or more of the provisions of this paragraph apply.

(i) For transient noncommunity water systems, the evaluation **[shall] must** include analysis of the following:

(A) Nitrate (as nitrogen) and nitrite (as nitrogen).

(B) Total coliform concentration and, if total coliform-positive, analyze for **[fecal coliform concentration] the presence of *E. coli*.**

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§ 109.507. Permits for innovative technology.

The Department may consider proposals for innovative water treatment processes, methods or equipment and may issue an innovative technology construction or operation permit if the applicant demonstrates to the Department's satisfaction that the proposal will provide drinking water that complies with **[Subchapter] Subchapters** B **and M** (relating to MCLs, MRDLs or treatment technique requirements**; and additional requirements for groundwater sources**). Applications for innovative technology construction permits **[shall] must** satisfy the requirements of § 109.503 (relating to public water system construction permits). The Department may condition innovative technology operation permits on duration, additional monitoring, reporting or other requirements as it deems necessary to protect the public health.

The Department may revoke an innovative technology construction or operation permit if it finds the public water system is not complying with drinking water standards or the terms or conditions of the permit or if there is a significant change in the source water quality which could affect the reliability and operability of the treatment facility. Authorization for construction, operation or modifications obtained under an innovative technology permit will not extend beyond the expiration date of the permit.

Subchapter F. DESIGN AND CONSTRUCTION STANDARDS

§ 109.602. Acceptable design.

(a) A public water system shall be designed to provide an adequate and reliable quantity and quality of water to the public. The design **[shall]** **must** ensure that the system will, upon completion, be capable of providing water that complies with the primary and secondary MCLs, MRDLs and treatment techniques established in **[Subchapter]** **Subchapters** B **and M** (relating to MCLs, MRDLs or treatment technique requirements**; and additional requirements for groundwater sources**) except as further provided in this section.

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§ 109.605. Minimum treatment design standards.

The level of treatment required for raw water depends upon the characteristics of the raw water, the nature of the public water system and the likelihood of contamination. The following minimum treatment design standards apply to new facilities and major changes to existing facilities:

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(3) For community water systems using groundwater, the minimum treatment design standard for disinfection technologies utilized at the entry point is a total of 99.99% treatment of viruses.

§ 109.611. Disinfection.

Disinfection facilities shall be designed to provide the dosage rate and contact time prior to the first customer sufficient to provide a quality of water that complies with the microbiological MCL and the appropriate MRDL, specified in § 109.202 (relating to State MCLs, MRDLs and treatment technique requirements) **and the treatment technique requirements in § 109.1302 (relating to treatment technique requirements).**

Subchapter G. SYSTEM MANAGEMENT RESPONSIBILITIES

§ 109.705. Sanitary surveys.

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(b) A community water system which does not collect five or more routine coliform samples per month shall do one of the following:

(1) Undergo a sanitary survey conducted by the Department by June 29, 1994, and thereafter undergo a subsequent sanitary survey conducted by the Department at a minimum **frequency** of every 3 years **[after the initial sanitary survey depending on the type of source, treatment and population served] or every 5 years if notified by the Department that the system has an outstanding performance record.**

(2) Increase the number of routine coliform samples collected to at least five samples per month if the Department does not conduct a sanitary survey by June 29, 1994, or

within **[3 years]** **the appropriate frequency as described in paragraph (1)** following the initial or a subsequent sanitary survey. This increased sampling frequency shall be in place of the monitoring frequency requirements for coliforms in § 109.301(3)(i) (relating to general monitoring requirements) and shall remain in effect through the month in which the next sanitary survey is conducted by the Department.

(c) A noncommunity water system which does not collect five or more routine coliform samples per month shall do one of the following:

(1) Undergo an initial sanitary survey conducted by the Department by June 29, 1999, and thereafter undergo a subsequent sanitary survey at a minimum of every 5 years after the initial sanitary survey **[except that noncommunity systems using only protected and disinfected groundwater shall undergo subsequent sanitary surveys at a minimum of every 10 years after the initial sanitary survey]**.

(2) Increase the number of routine coliform samples collected to at least five samples per month if the Department does not conduct a sanitary survey by June 29, 1999, or within 5 **[or 10 years using the criteria in paragraph (1)]** **years** following the initial or a subsequent sanitary survey. This increased sampling frequency shall be in place of the monitoring frequency requirements for coliforms in § 109.301(3)(i) and shall remain in effect through the month in which the next sanitary survey is conducted by the Department.

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(e) Significant deficiencies identified by the Department at public water systems using groundwater shall comply with § 109.1302(c) (relating to groundwater systems with significant deficiencies or source water *E. coli* contamination).

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Subchapter H. LABORATORY CERTIFICATION

§ 109.801. Certification requirement.

A laboratory shall be accredited under Chapter 252 (relating to laboratory accreditation) to perform analyses acceptable to the Department for the purposes of ascertaining drinking water quality and demonstrating compliance with monitoring requirements established in **[Subchapter]** **Subchapters** C **and M** (relating to monitoring requirements**; and additional requirements for groundwater sources**).

§ 109.810. Reporting and notification requirements.

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(b) **[A laboratory certified under this subchapter shall]** Whenever an MCL, MRDL or a treatment technique performance requirement under § 109.202 (relating to State MCLs, MRDLs and treatment technique requirements) is violated **[, or];** a sample result requires the collection of check samples under § 109.301 (relating to general monitoring requirements)**[:]; or a sample collected under Subchapter M (relating to additional requirements for groundwater sources) is *E. coli*-positive a laboratory accredited under Chapter 252 shall:**

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Subchapter I. VARIANCES AND EXEMPTIONS ISSUED BY THE DEPARTMENT

§ 109.901. Requirements for a variance.

(a) The Department may grant one or more variances to a public water system from a requirement respecting a MCL upon finding that:

(1) The public water system has installed and is using the best treatment technology, treatment methods or other means that the Department in concurrence with the Administrator finds are generally available to reduce the level of the contaminant**, and has determined that alternative sources of water are not reasonably available**.

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§ 109.903. Requirements for an exemption.

(a) The Department may exempt a public water system from an MCL or treatment technique requirement upon finding that:

(1) Due to compelling factors, the public water system is unable to comply with the contaminant level or treatment technique requirement**, or to implement measures to develop an alternative source of water supply**.

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(4) Management or restructuring changes or both as provided in 40 CFR 142.20(b)(1)(i) (relating to State-issued variances and exemptions) cannot reasonably be made that will

result in compliance with the applicable MCL or treatment technique requirement or, if compliance cannot be achieved, improve the quality of the drinking water.

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§ 109.906. Consideration of a request for a variance or exemption.

The Department will consider comments received during the comment period and testimony in the record of a public hearing held with respect to the request for a variance or exemption before making a determination. The Department will consider the availability of alternative water sources, risks to the public health from granting the relief requested and other relevant factors including the following considerations:

(1) In its consideration of whether the public water system satisfies the requirements for a variance from a maximum contaminant level under § 109.901(a) (relating to requirements for a variance), the Department will consider whether the public water system has installed and is effectively operating the best treatment technology, treatment methods, or other means that the Department finds in concurrence with the Administrator are generally available to reduce the level of the contaminant for which the variance is requested**, and whether the system has evaluated that alternative sources of water are not reasonably available**.

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(3) In its consideration of whether a public water system satisfies the requirements for an exemption under § 109.903 (relating to requirements for an exemption), the Department will consider factors such as:

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(iii) The availability of an alternative source of water, including the feasibility of partnerships with neighboring public water systems, as identified by the public water system or by the Department.

§ 109.907. Disposition of a request for a variance or exemption.

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(c) If the Department makes a determination to grant a variance or exemption request, it will document its findings as required under 40 CFR 142.20(a)(1) for granting a variance, and under 40 CFR 142.20(b)(1) for granting an exemption.

§ 109.908. Compliance schedules.

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(e) In accordance with 40 CFR 142.20(b)(2), the Department may renew an exemption for a public water system that serves fewer than 3,300 persons and which needs financial assistance for the necessary improvements under the initial compliance schedule, provided the Department establishes that the system is taking all practicable steps to meet the requirements of this subchapter and the established compliance schedule to achieve full compliance with the applicable MCL or treatment technique requirement. The Department must document its findings in granting an extension under this subsection.

Subchapter J. BOTTLED WATER AND VENDED SYSTEMS, RETAIL WATER FACILITIES AND BULK WATER HAULING SYSTEMS

§ 109.1002. MCLs, MRDLs or treatment techniques.

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(c) Bottled water and vended water systems, retail water facilities and bulk water hauling systems shall comply with Subchapter M (relating to additional requirements for groundwater sources).

§ 109.1003. Monitoring requirements.

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(d) Bottled water and vended water systems, retail water facilities and bulk water hauling systems shall comply with the monitoring requirements under Subchapter M (relating to additional requirements for groundwater sources).

Subchapter M. ADDITIONAL REQUIREMENTS FOR GROUNDWATER SOURCES

§ 109.1301. *Scope*. Beginning December 1, 2009, this subchapter applies to all public water systems that use groundwater excluding those systems that combine all of their groundwater with surface water or with groundwater under the direct influence of surface water prior to treatment under § 109.202(c)(1) (relating to State MCLs, MRDLs, and treatment technique requirements). For the purpose of this subchapter, "groundwater system" is defined as any public water system meeting this applicability statement including systems obtaining finished groundwater from another supplier.

§ 109.1302. *Treatment technique requirements*

(a) ***Community groundwater systems.*** **Community groundwater systems are required to provide continuous disinfection under § 109.202(c)(2) (relating to state MCLs, MRDLs and treatment technique requirements) and in addition shall:**

(1) Comply with triggered monitoring requirements under § 109.1303 (relating to triggered monitoring requirements for groundwater sources) until beginning compliance monitoring under paragraph (5).

(2) Maintain at each groundwater entry point a residual disinfectant concentration no less than 0.4mg/L expressed as free chlorine or its equivalent as approved by the Department, or other minimum residual specified by the Department.

(3) Demonstrate how at least 4-log treatment of viruses will be provided by submitting information as required under § 109.1306 (relating to information describing 4-log treatment and compliance monitoring) when directed by the Department or no later than:

(i) October 1, 2010, for systems serving more than 500 persons.

(ii) October 1, 2011, for systems serving 100 to 500 persons.

(iii) October 1, 2012, for systems serving less than 100 persons.

(4) Provide at least 4-log treatment of viruses prior to each groundwater entry point when directed by the Department or no later than:

(i) January 1, 2011, for systems serving more than 500 persons.

(ii) January 1, 2012, for systems serving 100 to 500 persons.

(iii) January 1, 2013, for systems serving less than 100 persons.

(iv) A Department approved alternative compliance schedule.

(5) Conduct compliance monitoring as described in § 109.1305 (relating to compliance monitoring) when directed by the Department following notification

of approval by the Department that at least 4-log treatment of viruses has been demonstrated for a groundwater source or sources.

(6) Provide at least 4-log treatment of viruses for new sources permitted after December 1, 2009, and conduct compliance monitoring as described in § 109.1305 beginning the first day the entry point is put into service.

(b) ***Noncommunity groundwater systems including bottled water and vended water systems, retail water facilities and bulk water hauling systems.***

(1) Noncommunity groundwater systems may demonstrate at least 4-log treatment of viruses is provided prior to a groundwater entry point by submitting information as required under § 109.1306. Systems demonstrating at least 4-log treatment of viruses under this paragraph shall:

(i) Conduct compliance monitoring as described in § 109.1305 when directed by the Department following notification of approval by the Department that at least 4-log treatment of viruses has been demonstrated for a groundwater source or sources.

(ii) Comply with triggered monitoring requirements under § 109.1303 until beginning compliance monitoring under subparagraph (i).

(2) Noncommunity groundwater systems not demonstrating at least 4-log treatment to the Department shall:

(i) Comply with triggered monitoring requirements under § 109.1303.

(ii) Comply with the requirements of assessment source water monitoring as described in § 109.1304 (relating to assessment source water monitoring) if the Department determines a groundwater source is at risk to fecal contamination. The Department will consider any factors that identify

sources at risk to fecal contamination, including one or more of the following:

(A) Sensitivity of the source aquifer to fecal contamination.

(B) Proximity to sources of fecal contamination.

(C) Microbiological sampling history.

(c) *Groundwater systems with significant deficiencies or source water E. coli contamination*

(1) A groundwater system with a significant deficiency or an *E. coli*-positive groundwater source sample collected under § 109.505 (3), § 109.1303(a) or § 109.1304(a) (relating to requirements for noncommunity water systems; triggered monitoring requirements for groundwater sources; and assessment source water monitoring) shall correct all significant deficiencies and, if directed by the Department, shall implement one or more of the following corrective actions:

(i) Provide an alternative source of water.

(ii) Eliminate the source of contamination.

(iii) Submit information required under § 109.1306 and provide treatment that reliably achieves at least 4-log treatment of viruses before or at the first customer for the groundwater source or sources.

(2) A groundwater system with a significant deficiency or an *E. coli*-positive groundwater source sample collected under § 109.1303(a) or § 109.1304(a) will receive one of the following forms of notification:

(i) Written notice from the Department of a significant deficiency.

(ii) Notification from a laboratory under § 109.810(b) (relating to reporting and notification requirements) that a groundwater source sample collected under § 109.1303(a) or § 109.1304(a) was found to be *E. coli*-positive.

(iii) Direction from the Department that an *E. coli* positive collected under § 109.1303(a) requires corrective action.

(3) Within 30 days of receiving initial notification under paragraph (2), the groundwater system shall consult with the Department regarding the appropriate corrective action unless the Department directs the groundwater system to implement a specific corrective action.

(4) Within 120 days of receiving initial notification under paragraph (2), or earlier if directed by the Department, the groundwater system shall either:

(i) Have completed corrective action in accordance with applicable Department plan review processes or other Department guidance or direction, if any, including Department-specified interim measures.

(ii) Be in compliance with a Department-approved corrective action plan and schedule subject to the following conditions:

(A) The Department must also approve any subsequent modifications to a Department-approved corrective action plan and schedule.

(B) If the Department specifies interim measures for protection of the public health pending Department

approval of the corrective action plan and schedule or pending completion of the corrective action plan, the system shall comply with these interim measures as well as with any schedule specified by the Department.

§ 109.1303. *Triggered monitoring requirements for groundwater sources.*

(a) Groundwater systems not required to conduct compliance monitoring under § 109.1302 (relating treatment technique requirements), of one or more groundwater sources shall collect a source water sample for *E. coli* within 24 hours of notification of a total coliform-positive sample collected under § 109.301(3) (relating to general monitoring requirements). The system shall collect a sample from each groundwater source that is not provided with at least 4-log treatment of viruses and is connected to the distribution system from which the total coliform-positive sample was collected.

(b) The Department may extend the 24-hour time limit to a maximum of 72 hours if the system adequately demonstrates a logistical problem outside the system's control in having the source sample or samples analyzed within 30 hours of collection. A logistical problem outside the system's control may include a coliform-positive sample result received over a holiday or weekend in which the services of a Department-accredited laboratory are not available within the prescribed sample holding time.

(c) Systems that obtain written approval from the Department may conduct monitoring at one or more sources within the groundwater system that are representative of

multiple sources used by that system and draw water from the same hydrogeologic setting.

(d) A groundwater source sample shall be collected at a location prior to any treatment.

(e) A public water system obtaining finished groundwater from another public water system shall notify the supplying system or systems within 24 hours of being notified of a total coliform-positive sample collected under § 109.301(3)(i).

(f) The following apply to an invalidation of an *E. coli* sample for groundwater source sampling:

(1) The Department may invalidate an *E. coli*-positive groundwater source sample collected under this section if:

(i) The system provides the Department with written notice from the laboratory that improper sample analysis occurred.

(ii) The Department determines and documents in writing that there is substantial evidence that the *E. coli*-positive groundwater source sample is not related to source water quality.

(2) If the Department invalidates an *E. coli*-positive groundwater source sample, the groundwater system shall collect a replacement source water sample under subsection (a) within 24 hours of being notified by the Department of its invalidation decision and have the replacement sample analyzed for *E. coli*. The Department may extend the 24-hour time limit on a case-by-case basis to 72 hours.

(g) For an *E. coli*-positive source water sample collected under subsection (a) that is not invalidated under subsection (f):

(1) The Department may require a groundwater system to perform a corrective action as described under § 109.1302 (c) (relating to treatment technique requirements).

(2) If the Department does not require corrective action under § 109.1302 (c), the system shall collect five additional source water samples from the same source within 24 hours of being notified of the *E. coli*-positive sample. If one of the additional samples collected under this paragraph is *E. coli*-positive, the groundwater system shall perform a corrective action as described under § 109.1302 (c).

(3) The system shall comply with Tier 1 public notification requirements under § 109.408 (relating to Tier 1 public notice – form, manner and frequency of notice).

(h) Systems providing water to another public water system receiving notification under subsection (e) shall comply with subsection (a).

§ 109.1304. *Assessment source water monitoring.*

(a) To enable the Department to determine if a groundwater system is using fecally-contaminated groundwater source, the Department may require a groundwater system to conduct monitoring for *E. coli*. If directed by the Department, a water supplier shall:

(1) Collect a total of 12 samples from each groundwater source, unless the system obtains written approval from the Department to conduct monitoring at one or

more sources within the groundwater system that are representative of multiple sources used by that system and draw water from the same hydrogeologic setting.

(i) For sources providing water to the public 12 months out of the year, groundwater systems shall collect one sample during each month.

(ii) For sources providing water to the public for less than 12 months out of the year, groundwater systems shall collect 12 samples evenly distributed over the operational period.

(iii) Samples collected under § 109.1303 (3)(a) (relating to triggered monitoring requirement for groundwater sources) may be used to satisfy the requirements of this subsection.

(iv) If a groundwater system obtains an *E. coli*-positive groundwater source sample, the groundwater system shall perform a corrective action as described under § 109.1302 (c) (relating to treatment technique requirements).

(v) The groundwater system may discontinue assessment source water monitoring if the system demonstrates they provide at least 4-log treatment of viruses under § 109.1302 (b)(1) or if directed by the Department.

(2) Collect groundwater source samples at a location prior to any treatment of the groundwater source.

(3) Collect a replacement groundwater source sample within 24 hours of being notified by the Department of its decision to invalidate a sample as established under § 109.301(3)(vi) (relating to general monitoring requirements) and have the replacement sample analyzed for *E. coli*.

(b) The following apply to an invalidation of an *E. coli* sample for groundwater source sampling:

(1) A groundwater system may obtain a Department invalidation of an *E. coli*-positive groundwater source sample collected under this section as follows:

(i) The system provides the Department with written notice from the laboratory that improper sample analysis occurred.

(ii) The Department determines and documents in writing that there is substantial evidence that the *E. coli* positive groundwater source sample is not related to source water quality.

(2) If the Department invalidates an *E. coli* positive groundwater source sample, the groundwater system shall collect a replacement source water sample under subsection (a) within 24 hours of being notified by the Department of its invalidation decision and have the replacement sample analyzed for *E. coli*. The Department may extend the 24-hour time limit on a case-by-case basis to 72 hours.

§ 109.1305. *Compliance monitoring*

(a) *Chemical disinfection.* Groundwater systems demonstrating at least 4-log treatment of viruses using chemical disinfection shall monitor for and maintain the Department-determined residual disinfection concentration every day the system serves the public from the groundwater source.

(1) A groundwater system serving greater than 3,300 shall:

(i) Continuously monitor the residual disinfectant concentration at the entry point or other location approved by the Department and record the results at least every 15 minutes each day that water from the groundwater source is served to the public.

(ii) Maintain the Department-determined minimum residual disinfectant concentration every day the public water system serves water from the groundwater source to the public.

(iii) Conduct grab sampling every 4 hours until the continuous monitoring equipment is returned to service if there is a failure in the continuous monitoring equipment. The system shall resume continuous residual disinfectant monitoring within 14 days.

(2) A groundwater system serving 3,300 or fewer people shall comply with one of the following subparagraphs:

(i) The groundwater system shall maintain the Department-determined minimum residual disinfectant concentration every day the public water system serves water from the groundwater source to the public. The groundwater system shall take a daily grab sample at the entry point during the hour of peak flow or at any other time specified by the Department. If any daily grab sample measurement falls below the Department-determined minimum residual disinfectant concentration, the groundwater system shall take follow up samples every 4 hours until the residual disinfectant concentration is restored to the Department-determined minimum level.

(ii) Monitor the disinfectant residual concentration continuously and meet the requirements of paragraph (1).

(b) *Membrane filtration*. Groundwater systems demonstrating at least 4-log treatment of viruses using membrane filtration shall monitor the membrane filtration process in accordance with all Department-specified monitoring requirements and operate the membrane filtration in accordance with all Department-specified compliance requirements. A groundwater system that uses membrane filtration is in compliance with the requirement to achieve at least 4-log removal of viruses when the following conditions are met:

(1) The membrane has an absolute molecular weight cut-off (MWCO), or an alternate parameter that describes the exclusion characteristics of the membrane, that can reliably achieve at least 4-log removal of viruses.

(2) The membrane process is operated in accordance with Department-specified compliance requirements.

(3) The integrity of the membrane is intact.

(c) *Alternative treatment.* Groundwater systems demonstrating at least 4-log treatment of viruses using a Department-approved alternative treatment method, including a combination of treatment methods shall:

(1) Monitor the alternative treatment in accordance with all Department-approved monitoring requirements.

(2) Operate the alternative treatment in accordance with all compliance requirements that the Department determines to be necessary to achieve at least 4-log treatment of viruses.

§ 109.1306. ***Information describing 4-log treatment and compliance monitoring***

(a) Systems demonstrating at least 4-log treatment of viruses under § 109.1302 (relating to treatment technique requirements) shall submit: information in writing on forms provided by the Department and may include plans, specifications, engineer's report, water quality analyses and other data, information or documentation reasonably necessary to enable the Department to evaluate:

(1) Treatment effectiveness.

(2) The methodology the system will use to comply with § 109.1305 (relating to compliance monitoring).

(b) ***Plans, specifications and engineer's report.*** **Plans, specifications and engineer's reports shall comply with the following:**

(1) The drawings, specifications and engineer's report shall be prepared by or under the supervision of a professional engineer registered to practice in this Commonwealth or in the state in which the public water system is located.

(2) The front cover or flyleaf of each set of drawings, of each copy of the engineer's report, and of each copy of specifications shall bear the

signature and imprint of the seal of the registered engineer. Drawings must bear an imprint or a legible facsimile of the seal.

§ 109.1307. *System management responsibilities.*

(a) *Reporting.* Groundwater systems shall comply with the following requirements and otherwise comply with § 109.701 (relating to reporting and recordkeeping):

(1) A groundwater system conducting compliance monitoring under § 109.1305 (relating to compliance monitoring):

(i) Shall report to the Department, for each entry point:

(A) The date, time and lowest residual disinfectant concentration each day.

(B) The date, duration and number of periods each day when the residual disinfectant concentration is less than the Department established minimum for more than 4 hours.

(ii) That experiences a breakdown in treatment shall notify the Department within 1 hour after the water system learns of the violation or the situation and provide public notice in accordance with § 109.408 (relating to Tier 1 public notice—form, manner and frequency of notice). A breakdown in treatment occurs whenever the system fails to meet, for greater than 4 continuous hours, any Department-specified requirements relating to:

(A) Minimum residual disinfectant concentration.

(B) Membrane operating criteria or membrane integrity.

(C) Alternative treatment operating criteria, if operation in accordance with the criteria or requirements is not restored within 4 hours

(2) After completing any corrective action under § 109.1302 (c) (relating to treatment technique requirements), a groundwater system shall notify the Department within 30 days of completion of the corrective action.

(b) *Recordkeeping.* Groundwater systems shall comply with § 109.701 and maintain the following information in its records:

(1) *Corrective actions.* Documentation shall be kept for at least 10 years.

(2) *Notice to the public as required under Subchapter D (relating to public notification).* Documentation shall be kept for at least 3 years.

(3) *Records of invalidation of E. coli-positive groundwater source samples under §§ 109.1303 (f) and 109.1304 (b).* Documentation shall be kept for at least 5 years.

(4) *Records of notification to other public water systems.* For a public water system obtaining groundwater from another public water system, documentation of notification to the supplier of total-coliform positive samples that are not invalidated under § 109.301 (3)(iii) (relating to general monitoring requirements). Documentation shall be kept for at least 5 years.

(5) *Compliance monitoring.* For systems, including suppliers providing water to another public water system, that are required to perform compliance monitoring under § 109.1305 (relating to compliance monitoring):

(i) Documentation of the records of the Department-specified minimum disinfectant residual shall be kept for at least 10 years.

(ii) Documentation of the records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the Department-prescribed minimum residual disinfectant concentration for more than 4 hours, shall be kept for at least 5 years.

(iii) Documentation of the records of the Department-specified compliance requirements for membrane filtration and of parameters specified by the Department for Department-approved alternative treatment and records of the date and duration of any failure to meet the membrane operating, membrane integrity or alternative treatment operating requirements for more than 4 hours, shall be kept for at least 5 years.