

Regulatory Analysis Form		This space for use by IRRC
(1) Agency Department of Environmental Protection		2008 NOV 19 PM 2:37 INDEPENDENT REGULATORY REVIEW COMMISSION
(2) I.D. Number (Governor's Office Use) #7-425		IRRC Number: 2134
(3) Short Title Chapter 109 – Groundwater Rule (GWR)		
(4) PA Code Cite 25 Pa. Code, Chapter 109	(5) Agency Contacts & Telephone Numbers Primary Contact: Michele L. Tate, 783-8727 Secondary Contact: Kelly Jean Heffner, 783-8727	
(6) Type of Rulemaking (Check One) <input checked="" type="checkbox"/> Proposed Rulemaking <input type="checkbox"/> Final Order Adopting Regulation <input type="checkbox"/> Final Order, Proposed Rulemaking Omitted	(7) Is a 120-Day Emergency Certification Attached? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes: By the Attorney General <input type="checkbox"/> Yes: By the Governor	
(8) Briefly explain the regulation in clear and nontechnical language. The purpose of the proposed rulemaking package is to amend the Department's Safe Drinking Water regulations to: (1) establish a risk-targeted approach to identify ground water systems that are susceptible to fecal contamination; (2) define adequate treatment technique requirements for the inactivation and/or removal of viruses; (3) create guidelines including corrective action alternatives for systems to respond in a timely and appropriate manner to significant deficiencies identified by the Department during inspections; and (4) include additional requirements for notifying the public. Risk-targeted Approach <ul style="list-style-type: none"> Indications of risk may come from total coliform monitoring, hydrogeologic sensitivity analyses, or other system-specific data and information. Systems with sources potentially at risk of fecal contamination that do not provide adequate treatment of viruses must monitor their untreated "raw water" for <i>E. coli</i> if directed by the Department. Systems detecting the presence of <i>E. coli</i> in their source water must take a corrective action to protect consumers. Treatment Technique Requirements <ul style="list-style-type: none"> This regulation specifically targets viral pathogens as a category of fecal contaminants. When treatment is required, at least 99.99% inactivation and/or removal of viruses (4-log treatment of viruses) must be achieved. Since community water systems in Pennsylvania are already required to provide continuous disinfection of groundwater sources, this regulation requires these systems to ensure 4-log treatment of viruses is provided. To allow community water systems to plan and make operational and/or physical changes at their system, the requirement to provide 4-log treatment will be phased in over 3 years after adoption of the rule based on the population served by the system or evidence of fecal contamination of their sources. To demonstrate treatment effectiveness, systems providing 4-log treatment of viruses must monitor and report the disinfectant residual or equivalent indicator for non-disinfection technologies at each entry point. Based on existing design standards and accepted equations for calculating 4-log inactivation of viruses, this regulation establishes a default minimum free chlorine residual of 0.4-mg/L (or its equivalent for other treatment technologies) at each community water system entry point beginning the effective date of the regulations. Systems may submit information to the Department to receive approval of an alternative minimum chlorine residual that is either lower or higher than 0.4-mg/L. Noncommunity water systems providing 4-log treatment of viruses through chlorination will be evaluated case by case to determine the minimum disinfectant residual required to be maintained.		

Significant Deficiencies and Corrective Actions

- When the Department identifies a significant deficiency at a public water system, the system must consult with the Department within 30 days of being notified of the deficiency. Further, the system needs to correct all deficiencies and complete other required corrective actions within 120 days or within a timeframe agreed upon by the Department. Finally, noncommunity water systems with documented fecal contamination of their sources and/or identified significant deficiencies may opt to eliminate the source of contamination, provide an alternative source of water, or install 4-log treatment of viruses.

Public Notification Requirements

- For systems that do not provide 4-log treatment of viruses and detect *E. coli* in one or more sources, systems must issue Tier 1 Public Notification to their customers. For systems providing 4-log treatment of viruses, systems must issue Tier 1 Public Notification when a breakdown in treatment occurs for greater than four hours. Systems failing to correct a significant deficiency within the prescribed timeframe must issue Tier 2 Public Notification. In addition, any system failing to conduct or report source water monitoring or compliance monitoring associated with this regulation must issue Tier 3 Public Notification to their customers.

Minor clarifications are also being made to the variance and exemption requirements in Subchapter I to be consistent with the federal rule and as a condition of primacy.

(9) State the statutory authority for the regulation and any relevant state or Federal court decisions.

The Pennsylvania Safe Drinking Water Act, 35 P.S. § 721.4(a), and sections 1917-A and 1920-A of the Administrative Code of 1929, 71 P.S. §§ 510-17 and 510-20(b).

(10) Is the regulation mandated by any Federal or state law or court order, or Federal regulation? If yes, cite the specific law, case or regulation, and any deadlines for action.

Yes. Section 1413 of the Federal Safe Drinking Water Act, 42 U.S.C. § 300g-2a, requires that, in order for the state to retain primary enforcement authority (primacy), the state must adopt drinking water regulations that are “no less stringent than” the national primary drinking water regulations not later than 2 years after the date on which the regulations are promulgated by the United States Environmental Protection Agency (EPA), or must ask EPA for an extension of up to 2 years. The Federal drinking water primacy regulations at 40 CFR § 142.12(a) also require the state to adopt all new and revised national primary drinking water regulations contained in 40 CFR Part 141 in order to retain primary enforcement responsibility. Furthermore, Section 4(a) of the Pennsylvania Safe Drinking Water Act, 35 P.S. § 721.4(a), requires the Environmental Quality Board to adopt maximum contaminant levels and treatment technique requirements no less stringent than those promulgated under the Federal act for all contaminants regulated under the national primary and secondary drinking water regulations. Also Section 5(a) of the state act, 35 P.S. § 721.5(a), requires the Department to adopt and implement a public water supply program which includes those program elements necessary to assume state primary enforcement responsibility under the Federal act.

EPA published the Federal Groundwater Rule in the Federal Register on November 8, 2006. For judicial review purposes, the final rule was promulgated on November 22, 2006. Therefore, Pennsylvania must adopt regulations implementing the Federal rule by November 22, 2008 unless the state requests an extension. Without an EPA-granted extension, failure to adopt regulations prior to November 22, 2008 may result in Pennsylvania losing primacy. Pennsylvania has applied for and received an extension to January 4, 2010, because the state is adopting two or more EPA regulations at the same time (one of the criteria for EPA to grant an extension).

EPA promulgated revisions to the Variance and Exemption Rule on August 14, 1998. The Department’s Safe Drinking Water regulations must be amended to incorporate the necessary federal requirements in order to maintain primacy.

(11) Explain the compelling public interest that justifies the regulation. What is the problem it addresses?

Groundwater has been traditionally regarded to be safer than surface water due to the natural filtering that occurs as groundwater travels through aquifer media. New evidence suggests that groundwater may be susceptible to viral contamination despite this natural filtering, particularly in karst aquifers where contaminants are more readily transported through conduits and fissures dissolved in the limestone. The viral pathogens that may be found in groundwater sources include enteric viruses such as Echovirus, Coxsackie viruses, Hepatitis A and E, Rotavirus, and Noroviruses. Vulnerable

groundwater sources have also been found to contain enteric bacterial pathogens such *E. coli*, *Salmonella spp.*, *Shigella spp.*, and *Vibrio cholera*. The Centers for Disease Control reports that between 1991 and 2000, groundwater source contamination and inadequate treatment accounted for 51 percent of all waterborne disease outbreaks in the United States. [This information is from EPA's Groundwater Rule Preamble].

Groundwater systems in Pennsylvania are not currently regulated with respect to source water viral contamination. The present regulations require only that community groundwater systems provide continuous disinfection that is detectable throughout the distribution system. Systems, particularly smaller systems, can potentially satisfy this requirement with entry point disinfectant residuals that are too low to effectively inactivate viruses. Thus, community systems meeting the current disinfection requirement may not be providing the public with adequate protection from viral contamination. Noncommunity groundwater systems are not required to provide disinfection; persons consuming water from these systems are not afforded any protection other than that provided by the characteristics of the source aquifer.

The Groundwater Rule provides protective barriers to waterborne viral disease outbreaks by 1) mandating that all community water systems apply treatment to achieve 99.99% removal and/or inactivation of viruses, 2) identifying noncommunity systems that are at risk to viral contamination, requiring those systems to evaluate their source water microbiological characteristics and apply treatment if necessary, 3) establishing a regular schedule and protocol for sanitary surveys designed to identify system deficiencies, and 4) providing corrective action alternatives and deadlines for systems responding to identified deficiencies.

(12) State the public health, safety, environmental or general welfare risks associated with non-regulation.

Non-regulation of groundwater systems with respect to viral contamination will allow for the continued potential of viral-exposure of an estimated 7 million Pennsylvanians and an undefined number of non-Pennsylvanian tourists and other travelers. Persons consuming water from the estimated 780 noncommunity systems that draw water from limestone aquifers are at a particularly elevated risk because the hydrogeologic conditions allow for more efficient transmission of contaminants.

(13) Describe who will benefit from the regulation. (Quantify the benefits as completely as possible and approximate the number of people who will benefit.)

Approximately 7 million Pennsylvanians served by 9,100 public water supplies utilizing groundwater sources that fall under the purview of this rule.

(14) Describe who will be adversely affected by the regulation. (Quantify the adverse effect as completely as possible and approximate the number of people who will be adversely affected.)

No adverse effects are anticipated with these amendments, but rather their implementation will result in increased protection of public health.

(15) List the persons, groups or entities that will be required to comply with the regulation. (Approximate the number of people who will be required to comply.)

Public water systems serving groundwater not combined with surface water or groundwater under the direct influence of surface water prior to treatment will be required to comply with the proposed regulations. The proposed amendments will affect approximately 1,700 Community water systems serving a population of 4 million and 7,400 noncommunity water systems serving a population of 3 million.

(16) Describe the communications with and input from the public in the development and drafting of the regulation. List the persons and/or groups who were involved, if applicable.

The draft proposed rulemaking was submitted to the Small Water Systems Technical Assistance Center (TAC) Advisory Board for review and discussion on December 13, 2007. A comment was received from TAC during the December 13 meeting. TAC Board members were given the opportunity to provide additional comments and recommendations until January 8, 2008.

(17) Provide a specific estimate of the costs and/or savings to the regulated community associated with compliance, including any legal, accounting or consulting procedures which may be required.

The proposed amendments will result in increased cost to a number of public water systems using groundwater sources. Costs incurred from system-to-system may vary considerably due to the current treatment capacity of a system, groundwater source quality and sensitivity of the groundwater source to fecal contamination. EPA estimates corrective actions systems must take in response to any significant deficiencies identified by the Department or in response to the presence of *E. coli* in raw source water may be the most costly expenses a system may incur. Corrective actions include: (1) correcting any system deficiencies; (2) installing or upgrading treatment to achieve at least 4-log inactivation and/or removal of viruses; (3) providing an alternate source of water, or; (4) eliminating a source of fecal contamination. Systems providing sufficient treatment must conduct compliance monitoring to ensure treatment effectiveness. Additional costs may be borne if a system must install equipment to continuously monitor a disinfectant residual.

EPA estimates the mean annualized nationwide cost for the regulated community to range from \$50.0 million (three percent discount rate) to \$50.6 million (seven percent discount rate). This translates to an annual cost in Pennsylvania to be approximately \$3.1 million. This estimate includes costs for systems that are not owned by local or state government (\$2,650,123), systems that are owned by local governments in the Commonwealth (\$430,100) and systems that are state-owned (\$77,377). Costs are based on 2003 dollars.

The proposed minor revisions to Subchapter I, variances and exemptions, primarily address existing requirements. As a result, costs are not expected to substantially increase or decrease.

(18) Provide a specific estimate of the costs and/or savings to local governments associated with compliance, including any legal, accounting or consulting procedures which may be required.

The proposed amendments will affect all public water systems serving groundwater not combined with surface water prior to treatment which includes local government agencies and municipal authorities operating such systems. Of the 1,675 community water systems in Pennsylvania affected by the Groundwater Rule, 735 are operated by local governments. There are 180 transient noncommunity systems and 158 nontransient noncommunity systems that are owned by local governments. The total annual cost to these cities/boroughs or other municipal authorities are calculated to be \$430,100. See question 20a (below) for cost by type of public water system. Costs are based on 2003 dollars.

The proposed minor revisions to Subchapter I, variances and exemptions, primarily address existing requirements. As a result, costs are not expected to substantially increase or decrease.

(19) Provide a specific estimate of the costs and/or savings to state government associated with the implementation of the regulation, including any legal, accounting or consulting procedures which may be required.

Implementation of the proposed amendments will result in Pennsylvania state government incurring costs associated with increased sanitary survey frequencies, data management, tracking monitoring information, reviewing action plans and evaluating system treatment efficacy. EPA estimates nationwide costs for state government to equate to nearly \$11.8 million. The expected annual cost to Pennsylvania state government to administer the Groundwater Rule equates to \$708,000.

Additionally, Pennsylvania state government owns approximately 223 public water systems in locations including state parks, prisons, schools, and highway rest stops. There are 12 community water systems, 195 transient noncommunity systems and 16 nontransient noncommunity systems. The estimated cost to Pennsylvania state government in regulated costs to comply with the Groundwater Rule equates to approximately \$77,377. See question 20a (below) for cost by type of public water system.

All costs are based on 2003 dollars.

The proposed minor revisions to Subchapter I, variances and exemptions, primarily address existing requirements. As a result, costs are not expected to substantially increase or decrease.

(20) In the table below, provide an estimate of the fiscal savings and cost associated with implementation and compliance for the regulated community, local government, and state government for the current year and five

subsequent years.

	Current FY Year	FY +1 Year	FY +2 Year	FY +3 Year	FY +4 Year	FY +5 Year
SAVINGS:	\$	\$	\$	\$	\$	\$
Regulated Community	0	0	0	0	0	0
Local Government	0	0	0	0	0	0
State Government	0	0	0	0	0	0
Total Savings	0	0	0	0	0	0
COSTS:						
Regulated Community	2,650,123	2,650,123	2,650,123	2,650,123	2,650,123	2,650,123
Local Government	430,100	430,100	430,100	430,100	430,100	430,100
State Government **	785,377	785,377	785,377	785,377	785,377	785,377
Total Costs	3,865,600	3,865,600	3,865,600	3,865,600	3,865,600	3,865,600
REVENUE LOSSES:						
Regulated Community	0	0	0	0	0	0
Local Government	0	0	0	0	0	0
State Government	0	0	0	0	0	0
Total Revenue Losses	0	0	0	0	0	0

** Includes costs for DEP to administer the program (\$708,000); and costs to other regulated state agencies for state owned public water systems (\$77,377).

(20a) Explain how the cost estimates listed above were derived.

The costs listed above were derived from the nationwide costs compiled and published by the EPA in the Preamble of the *Federal Groundwater Rule* (Federal Register, Vol. 71, No. 216). The Pennsylvania costs are the national costs multiplied by the ratio of the number of Pennsylvania systems to the number of nationwide systems. A ratio and cost was derived for community water systems (CWS), nontransient noncommunity water systems (NTNCWS) and transient noncommunity water systems (TNCWS). Only 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 are included in the analysis. Costs are based on 2003 dollars.

CWS Cost Analysis:

The ratio of PA CWS to nationwide CWS is $1,675 / 42,361^1 = 0.04$

Estimated nationwide CWS cost² = \$18,680,000

Estimated annual cost to Pennsylvania CWS = $\$18,680,000 \times 0.040 = \$747,200$

Percentage of Pennsylvania CWS that are "Local Government" water and municipal authorities = 43.9%³

Percentage of Pennsylvania CWS that are state government owned = 0.74%

Note: "Local Government" and state government in this analysis is the regulated community, not regulating agencies.

Estimated annual cost to Pennsylvania CWS that are local government authorities = $\$747,200 \times 0.439 = \$328,021$

Estimated annual cost to Pennsylvania CWS that are state government owned = $\$747,200 \times 0.0074 = \$5,529$

Estimated annual cost to Pennsylvania CWS that are not local or state government = $\$747,200 - \$328,021 - \$5,529 = \$413,650$

NTNCWS Cost Analysis:

The ratio of PA NTNCWS to nationwide NTNCWS is $1,146 / 18,908^1 = 0.06$

Estimated nationwide NTNCWS cost² = \$4,920,000

Estimated annual cost to Pennsylvania NTNCWS = $\$4,920,000 \times 0.061 = \$295,200$
 Percentage of Pennsylvania NTNCWS that are "Local Government" water and municipal authorities = 13.8%³
 Percentage of Pennsylvania NTNCWS that are state government owned = 1.41%

Note: "Local Government" and state Government in this analysis is the regulated community, not regulating agencies.

Estimated annual cost to Pennsylvania NTNCWS that are local government authorities = $\$295,200 \times 0.138 = \$40,738$
 Estimated annual cost to Pennsylvania NTNCWS that are state government owned = $\$295,200 \times .0141 = \$4,162$
 Estimated annual cost to Pennsylvania NTNCWS that are not local or state government = $\$295,200 - \$40,738 - \$4,162 = \$250,300$

TNCWS Cost Analysis:

The ratio of PA TNCWS to nationwide TNCWS is $6,162 / 86,061^1 = 0.08$
 Estimated nationwide TNCWS cost² = $\$26,440,000$
 Estimated annual cost to Pennsylvania TNCWS = $\$26,440,000 \times 0.08 = \$2,115,200$
 Percentage of Pennsylvania TNCWS that are "Local Government" water and municipal authorities = 2.9%³
 Percentage of Pennsylvania TNCWS that are state government owned = 3.2%

Note: "Local Government" and state government in this analysis is the regulated community, not regulating agencies.

Estimated annual cost to Pennsylvania TNCWS that are local government authorities = $\$2,115,200 \times 0.029 = \$61,341$
 Estimated annual cost to Pennsylvania TNCWS that are state government owned = $\$2,115,200 \times .032 = \$67,686$
 Estimated annual cost to Pennsylvania TNCWS that are not local or state government = $\$2,115,200 - \$61,341 - \$67,686 = \$1,986,173$

State Government Cost Analysis:

Estimated nationwide state agencies cost⁴ = $\$11,800,000$
 The ratio of all PA public water systems to the number of all public water systems nationwide = $8,983 / 147,330^1 = 0.06$
 Estimated PA state government annual cost to administer the Groundwater Rule = $\$11,800,000 \times 0.06 = \$708,000$
 Estimated PA state government annual cost to comply with the Groundwater Rule for state owned public water systems = $\$5,529 + \$4,162 + \$67,686 = \$77,377$

Note: State government in this analysis includes regulating agencies and the regulated agencies in the form of state-owned public water systems.

Estimated PA state government annual cost to administer the Groundwater Rule and to comply with the Groundwater Rule = $\$708,000 + \$77,377 = \$785,377$

SUMMARY:

CWS Costs:

Local Government	\$328,021
State Government	\$ 5,529
Other	<u>\$413,650</u>
	\$747,200

NTNCWS Costs:

Local Government	\$ 40,738
State Government	\$ 4,162
Other	<u>\$250,300</u>
	\$295,200

TNCWS Costs:

Local Government	\$ 61,341
State Government	\$ 67,686
Other	<u>\$ 1,986,173</u>

\$ 2,115,200

State Costs:

Administration: \$708,000

Compliance: \$ 77,377
785,377

- 1 – Federal Register, Vol. 71, No. 216, pg. 65625
- 2 – Federal Register, Vol. 71, No. 216, pg. 65628
- 3 – Safe Drinking Water Program's PADWIS data system
- 4 – Federal Register, Vol. 71, No. 216, pg. 65629

The proposed minor revisions to Subchapter I, variances and exemptions, primarily address existing requirements. As a result, costs are not expected to substantially increase or decrease.

(20b) Provide the past three year expenditure history for programs affected by the regulation.

Program	FY-3 (2005 – 2006)	FY-2 (2006 – 2007)	FY-1 (2007 - 2008)	Current FY (2008 – 2009)
Environmental Protection Operations (#160-10381)	\$87,897,000	\$89,847,000	\$98,582,000	\$102,149,000
Environmental Program Management (#161-10382)	\$37,049,000	\$36,868,000	\$39,909,000	\$41,800,000

(21) Using the cost-benefit information provided above, explain how the benefits of the regulation outweigh the adverse effects and costs.

Implementation of the proposed amendments are not anticipated to produce adverse effects, rather the result will be increased benefits to public health. Consumption of fecally contaminated groundwater has the potential to cause endemic viral illnesses and deaths. The EPA calculates the annualized viral illnesses and deaths avoided for Type A virus (rotavirus) to be 39,442 and 2,426 for Type B virus (enterovirus)¹. Implementation of the Groundwater Rule is expected to result in the avoidance of approximately 2,400 Type A virus illnesses and 150 Type B virus illnesses in Pennsylvania.

The costs associated with endemic viral illness include medical costs, lost work time and the reduced utility from being sick. EPA estimates the annualized benefits from illnesses avoided nationwide to equal \$19.7 million². Benefits are based on 2003 dollars.

Benefits Analysis:

Estimated nationwide benefits = \$19,700,000

The ratio of all PA public water systems to the number of all public water systems nationwide = $8,983 / 147,330^3 = 0.06$

Estimated benefits to Pennsylvanians = $\$19,700,000 \times 0.06 = \$1,182,000$.

- 1 – Federal Register, Vol. 71, No. 216, pg. 65620
- 2 – Federal Register, Vol. 71, No. 216, pg. 65619
- 3 – Federal Register, Vol. 71, No. 216, pg. 65625

(22) Describe the nonregulatory alternatives considered and the costs associated with those alternatives. Provide the reasons for their dismissal.

No nonregulatory alternatives were considered. These amendments reflect Federal rules that must be complied with or adopted by the individual states.

(23) Describe alternative regulatory schemes considered and the costs associated with those schemes. Provide the reasons for their dismissal.

No alternative regulatory schemes were considered. These amendments reflect Federal rules that must be complied with or adopted by the individual states.

(24) Are there any provisions that are more stringent than Federal standards? If yes, identify the specific provisions and the compelling Pennsylvania interest that demands stronger regulation.

Yes. Federal Requirements found in 40 CFR § 141.402(a)(5) *Exceptions to the Triggered Source Water Monitoring Requirements* allow a system that collects a total coliform-positive sample in the distribution system that is determined to lie within a portion of the distribution system expected to test positive for total coliform to not comply with triggered monitoring requirements. The Department's Groundwater Rule does not afford this option and requires a groundwater source sample be collected and analyzed for *E. coli*. This requirement will result in increased public health benefits.

Federal Requirements found in 40 CFR § 141.402(b)(5) contain assessment source water monitoring requirements, which allow source water sampling at a location after treatment if approved by the state. The Department only allows source water sampling at a location prior to treatment for assessment source water sampling to ensure the sample is an accurate representation of source water quality.

Federal Requirements found in 40 CFR § 141.403(c) *Discontinuing Treatment* allow a system to discontinue 4-log treatment of viruses if the state determines and documents in writing that 4-log treatment of viruses is no longer necessary. The Department will not allow the discontinuation of 4-log treatment of viruses if put into place because of a corrective action.

Federal Requirements found in 40 CFR § 141.403(b) contain compliance monitoring requirements for systems choosing to provide 4-log treatment of viruses. Under § 109.1302(a)(4), the Department proposes to require all community water systems with groundwater sources to reliably achieve at least 4-log treatment of viruses for those sources. This component of the proposed rulemaking is more stringent than Federal requirements. Under § 109.202(c)(2), existing requirements for community systems in Pennsylvania are already more stringent than Federal regulations. Unlike the Federal requirements, Pennsylvania mandates all community water systems to provide continuous disinfection. The current state regulations do not, however, require groundwater systems to maintain any minimum measure of disinfectant level or effectiveness at the entry point. The Pennsylvania Groundwater Rule requirement that all community systems maintain at least 4-log treatment of viruses for their groundwater sources is a logical progression of disinfection treatment and will provide additional protection of public health. Most systems are presently capable of providing 4-log treatment of viruses without significant modification. For the remaining systems, this requirement will likely be satisfied by one or more of the following: revising system-specific operational practices, modifying existing storage, or adding storage capacity.

This requirement will be phased in based on population served, and is planned to occur in the period from January 1, 2011 to January 1, 2013. Systems will need to comply with triggered monitoring requirements beginning December 1, 2009 until receiving notification from the Department that they are demonstrating at least 4-log treatment of viruses and then are directed to begin compliance monitoring.

Under § 109.1302(a)(2), the Department establishes a default entry point free chlorine minimum residual of 0.4mg/L or its equivalent for all community systems beginning the effective date of the regulations. This provision is more stringent than Federal requirements as EPA has not established a set residual disinfectant concentration. Community water systems must maintain the default minimum residual until they successfully demonstrate that an alternative residual other than 0.4mg/L can provide at least 4-log treatment of viruses. The default residual is proposed to better protect public health during the interim period between the effective date of this rule and the date when the Department has verified a system is providing 4-log treatment of viruses.

The default residual of 0.4mg/L was determined using the accepted calculation for CT. Based on conservative assumptions of groundwater characteristics in Pennsylvania (temperature no less than 5°C and pH less than 9), a CT value of 8 min-mg/L is required to achieve 4-log inactivation of viruses. Further, existing Design Standards in Part II of the Department's "Public Water Supply Manual" require that 20 minutes of contact time with minimal short circuiting be provided prior to

each entry point. Assuming the Design Standards are met, a minimum residual of 0.4mg/L multiplied by 20 minutes contact time results in the required CT value of 8 min-mg/L.

Most systems can readily maintain a 0.4mg/L minimum residual prior to each entry point simply by adjusting their level of disinfectant application. Currently ninety three percent of community water systems disinfect with chlorine. Of these systems, at least sixty percent presently maintain an average residual of 0.4mg/L or greater in the distribution system. Because entry point disinfectant residuals are greater than levels in the distribution system, it is expected that the percentage of systems maintaining at least 0.4mg/L at the entry point is much higher than sixty percent.

The Small Water Systems Technical Assistance Center Advisory Board (TAC) reviewed the draft Groundwater Rule with the more stringent provisions. TAC expressed no disagreement with these provisions in their meeting or in follow-up written comments.

(25) How does the regulation compare with those of other states? Will the regulation put Pennsylvania at a competitive disadvantage with other states?

Pennsylvania is proposing all community water systems that use groundwater provide 99.99% (4-log) treatment of viruses by inactivation or a combination of inactivation and removal. This provision may be more stringent than regulations adopted by many other states. However, unlike most other states, Pennsylvania requires disinfection of groundwater sources at all community water systems. Pennsylvania will not be placed at a competitive disadvantage because most systems are presently capable of providing 4-log treatment of viruses without modification to system components.

(26) Will the regulation affect existing or proposed regulations of the promulgating agency or other state agencies? If yes, explain and provide specific citations.

The amendments will be incorporated into the existing language of 25 Pa Code Chapter 109. Other than this incorporation, the amendments should not affect any existing or proposed regulations of DEP or any other state agency.

(27) Will any public hearings or informational meetings be scheduled? Please provide the dates, times, and locations, if available.

It is anticipated that informational meetings will be held with various agencies that operate or regulate many noncommunity water systems which will be affected by the provisions of these regulations. It is expected meetings will be held with the Department of Conservation and Natural Resources, the Department of Education and the Department of Agriculture because of their involvement with state parks, schools and restaurants respectively.

(28) Will the regulation change existing reporting, record keeping, or other paperwork requirements? Describe the changes and attach copies of forms or reports which will be required as a result of implementation, if available.

This regulation will not change existing requirements, but it will add new requirements for groundwater systems. Community water systems will need to complete and submit a form that demonstrates how 4-log treatment will be provided for each source and describes how compliance monitoring will be conducted. Systems conducting compliance monitoring because 4-log treatment of viruses is provided will need to use existing Department forms to submit disinfection data on a monthly basis.

(29) Please list any special provisions which have been developed to meet the particular needs of affected groups or persons including, but not limited to, minorities, elderly, small businesses, and farmers.

§109.1302(a)(4) establishes a timeline to comply with the requirement for all community water systems to provide at least 4-log treatment of viruses based on the population served. Phasing in this requirement from 2011 to 2013 will afford systems time to budget if additional costs are anticipated to meet this provision.

(30) What is the anticipated effective date of the regulation; the date by which compliance with the regulation will be required; and the date by which any required permits, licenses or other approvals must be obtained?

The amendments are targeted for promulgation by December 2009. Working under an EPA approved extension request, Pennsylvania must adopt and implement the requirements of this regulation by January 4, 2010. Various permits and

approvals resulting from the amendments will be obtained in accordance with the procedures and schedules of both the amendments and currently existing regulations.

(31) Provide the schedule for continual review of the regulation.

The amendments will be reviewed in accordance with the Sunset Review Schedule published by the Department.

**FACE SHEET
FOR FILING DOCUMENTS
WITH THE LEGISLATIVE REFERENCE
BUREAU**

(Pursuant to Commonwealth Documents Law)

RECEIVED

2008 NOV 19 PM 2:37

INDEPENDENT REGULATORY
REVIEW COMMISSION

DO NOT WRITE IN THIS SPACE

Copy below is hereby approved as to form and legality.
Attorney General

[Signature]

By: (Deputy Attorney General)

NOV 12 2008

DATE OF APPROVAL

Check if applicable
Copy not approved. Objections attached.

Copy below is hereby certified to be true and
correct copy of a document issued, prescribed or
promulgated by:

DEPARTMENT OF ENVIRONMENTAL
PROTECTION
ENVIRONMENTAL QUALITY BOARD

(AGENCY)

DOCUMENT/FISCAL NOTE NO. 7-425

DATE OF ADOPTION August 19, 2008

BY *[Signature]*

TITLE JOSEPH R. POWERS
ACTING CHAIRMAN

EXECUTIVE OFFICER CHAIRMAN OR SECRETARY

Copy below is hereby approved as to form and legality
Executive or Independent Agencies

BY *[Signature]*
Andrew C. Clark

DATE OF APPROVAL **OCT 21 2008**

(Deputy General Counsel)
~~(Chief Counsel, Independent Agency)~~
(Strike inapplicable title)

Check if applicable. No Attorney General Approval
or objection within 30 days after submission.

NOTICE OF PROPOSED RULEMAKING

**DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL QUALITY BOARD**

Groundwater Rule

25 Pa. Code, Chapter 109

Notice of Proposed Rulemaking
Department of Environmental Protection
Environmental Quality Board
25 Pa. Code, Chapter 109
Safe Drinking Water
(Groundwater Rule)

Preamble

The Environmental Quality Board (Board) proposes to amend 25 Pa. Code, Chapter 109 (relating to Safe Drinking Water). The amendments will provide for increased protection against microbial pathogens in public water systems that use groundwater sources. The Groundwater Rule establishes a risk-targeted approach to identify groundwater sources that are susceptible to fecal contamination. The Department has chosen *E. coli* as the indicator organism for source water monitoring.

The Groundwater Rule builds upon the existing Total Coliform Rule and establishes corrective actions, monitoring and source treatment provisions as part of the risk-based strategy.

This proposal was adopted by the Board at its meeting of August 19, 2008.

A. Effective Date

These amendments will go into effect upon publication in the *Pennsylvania Bulletin* as final rulemaking.

B. Contact Persons

For further information, contact Ronald Furlan, Chief, Division of Planning and Permits, P.O. Box 8774, Rachel Carson State Office Building, Harrisburg, PA 17105-8774, (717) 787-8184, or Marylou Barton, Assistant Counsel, Bureau of Regulatory Counsel, P.O. Box 8464, Rachel Carson State Office Building, Harrisburg, PA 17105-8464, (717) 787-7060. Information regarding submitting comments on this proposal appears in Section J of this preamble. Persons with a disability may use the AT&T Relay Service by calling 1-800-654-5984 (TDD users) or 1-800-654-5988 (voice users). The proposal is available electronically through the DEP web site (<http://www.depweb.state.pa.us>).

C. Statutory Authority

The proposed rulemaking is being made under the authority of Section 4 of the Pennsylvania Safe Drinking Water Act (35 P.S. § 721.4), which grants the Board the authority to adopt rules and regulations governing the provision of drinking water to the public, and Sections 1917-A and 1920-A of the Administrative Code of 1929 (71 P.S. §§ 510-7 and 510-20).

D. Background and Purpose

Groundwater has been traditionally regarded to be safer than surface water due to the natural filtering that occurs as groundwater travels through aquifer media. New evidence suggests that groundwater may be susceptible to viral contamination despite this natural filtering, particularly in karst aquifers where contaminants are more readily transported through conduits and fissures dissolved in the limestone. Groundwater supplies can become fecally contaminated when surface water infiltrates karst aquifers or when high densities of livestock farming operations or on-lot sewage treatment systems overwhelm the natural protective barriers of non-karst aquifers.

The viral pathogens that may be found in fecally contaminated groundwater sources include enteric viruses such as Echovirus, Coxsackie viruses, Hepatitis A and E, Rotavirus, and Noroviruses. Vulnerable groundwater sources have also been found to contain enteric bacterial pathogens such *E. coli*, *Salmonella spp.*, *Shigella spp.*, and *Vibrio cholera*. The Centers for Disease Control reports that between 1991 and 2000 groundwater source contamination and inadequate treatment accounted for 51 percent of all waterborne disease outbreaks in the United States.

Groundwater systems in Pennsylvania are not currently regulated with respect to source water viral contamination. The present regulations require only that community groundwater systems provide continuous disinfection that is detectable throughout the distribution system. Systems, particularly smaller systems, can potentially satisfy this requirement with entry point disinfectant residuals that are too low to effectively inactivate viruses. Thus, community systems meeting the current disinfection requirement may not be providing the public with adequate protection from viral contamination. Noncommunity groundwater systems are not required to provide disinfection; persons consuming water from these systems are not afforded any protection other than that provided by the characteristics of the source aquifer.

This proposed rulemaking package will amend the Department's Safe Drinking Water regulations to: (1) establish a risk-targeted approach to identify ground water systems that are susceptible to fecal contamination; (2) define adequate treatment technique requirements for the inactivation and/or removal of viruses; (3) create guidelines including corrective action alternatives for systems to respond in a timely and appropriate manner to significant deficiencies identified by the Department during inspections; and (4) include additional requirements for notifying the public.

Minor clarifications are being made to the variance and exemption requirements in Subchapter I of Chapter 109 to be consistent with the federal rule and as a condition of primacy.

The draft proposed amendments were submitted to the Small Water Systems Technical Assistance Center Advisory Board (TAC) for review and discussion on December 13, 2007. The TAC Board commented regarding the recordkeeping requirements stating, "The extensive recordkeeping requirements are unrealistic for small systems." The TAC Board suggested that

the Department keep and maintain these records and automatically send them to the owner whenever a system changes ownership.

The recordkeeping requirements contained in 109.1307(b) are consistent with the federal requirements, five or ten years for most categories, and these have been long-standing requirements. Further, it should be noted that Pennsylvania must be at least as stringent as the corresponding EPA requirements. In addition, the Department historically has provided authorized representatives with system-specific records upon request, and would continue to do so.

E. Summary of Regulatory Requirements

§ 109.1 Definitions.

The Department has added definitions for the following terms in § 109.1: *groundwater*, *log inactivation*, *log removal*, *log treatment* and *microorganism*. These terms are vital to the clear interpretation of the Groundwater Rule and had not been previously defined in Chapter 109.

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

Section § 109.408 (a)(8) is added to require Tier 1 public notice for a positive *E. coli* source water sample for systems monitoring under the triggered monitoring requirements (§ 109.1303) and the assessment source water monitoring requirements (§ 109.1304).

Section § 109.408(a)(9) is added to clarify that, for systems conducting compliance monitoring, a breakdown in treatment requires Tier 1 public notification.

§ 109.408 Tier 2 public notice – form, manner and frequency of notice.

Section § 109.409(a)(1) is amended to include the requirement of Tier 2 public notification for a failure to take corrective action as required 40 CFR § 141.203(a)(4).

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

This amendment reflects the federal requirements found in 40 CFR § 141.403(a)(7)(ii). In addition to other public notification obligations, a noncommunity system is required to provide special notice to the public for significant deficiencies that have not been corrected within 12 months of being notified by the Department.

§ 109.503 Public water system construction permits.

This section was amended to clarify the monitoring requirements by specifying *E. coli* as the fecal indicator for new source sampling.

§ 109.505 *Requirements for noncommunity water systems.*

To account for new treatment technique requirements, as specified in Subchapter M, this section was amended to clarify the conditions under which noncommunity systems may file a brief description of the system in lieu of obtaining a permit. Prior to the Groundwater Rule, noncommunity water systems were not required to obtain construction and operation permits if they provided treatment no greater than disinfection. The Department has modified this exception. These permits will be required for noncommunity systems providing only disinfection if they are required to meet 4-log treatment of viruses under § 109.1302. The demonstration of 4-log treatment requires an engineering determination that must be reviewed as part of a permitting process.

This section was also amended to clarify the monitoring requirements by specifying *E. coli* as the fecal indicator for new source sampling for transient noncommunity systems.

§ 109.605 *Minimum treatment design standards.*

§ 109.605(3) was added to define minimum treatment design standards for new facilities is at least 99.99% (4-log) treatment of viruses.

§ 109.705 *Sanitary surveys.*

This section was amended to revise the frequency of sanitary surveys conducted by the Department to be consistent with the federal requirements found in 40 CFR § 142.16(o)(2).

§ 109.901 *Requirements for a variance.*

This section was amended to incorporate the federal requirements found in 40 CFR § 142.10(d)(2).

§ 109.903 *Requirements for an exemption.*

This section was amended to incorporate the federal requirements found in 40 CFR §§ 141.4(a) and 142.20(b).

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

This section was amended to incorporate the federal requirements found in 40 CFR § 142.20(b)(1)(ii).

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

This section was amended to incorporate the federal requirements found in 40 CFR §§ 142.20(a)(1) and 142.20(b)(1).

§ 109.908 *Compliance schedules.*

This section was amended to incorporate the federal requirements found in 40 CFR §§ 142.20(a)(2) and 142.20(b)(2).

§ 109.1002 *MCLs, MRDLs or treatment techniques.*

This section was amended to clarify that bottled water and vended water systems, retail water facilities and bulk water hauling systems shall comply with Subchapter M.

§ 109.1003 *Monitoring requirements.*

This section was amended to clarify that bottled water and vended water systems, retail water facilities and bulk water hauling systems shall comply with the monitoring requirements of Subchapter M.

Subchapter M. *Additional requirements for groundwater sources.*

This subchapter was added to reflect the Federal Requirements in 40 CFR Subpart S and to further clarify requirements for systems using groundwater sources in Pennsylvania. The following is a brief summary of each section including descriptions of where the proposed state requirements are more stringent than Federal regulations.

§ 109.1301 *Scope.*

This section clarifies that systems using groundwater not combined with surface water or groundwater under the direct influence of surface water prior to treatment are required to comply with the provisions of Subchapter M.

§ 109.1302 *Treatment technique requirements.*

This section establishes the treatment technique requirements for community and noncommunity systems and includes corrective action alternatives for systems with significant deficiencies or source water *E. coli* contamination.

§ 109.1302(a)(4) requires all community water systems with groundwater sources to reliably achieve at least 4-log treatment of viruses for those sources. This component of the proposed rulemaking is more stringent than the current Federal Requirements found in 40 CFR § 141.403(b).

Under § 109.202(c)(2), existing requirements for community systems in Pennsylvania are already more stringent than Federal regulations. Unlike the Federal requirements, Pennsylvania mandates that all community water systems provide continuous disinfection. The current state regulations do not, however, require groundwater systems to maintain any minimum measure of disinfectant level or effectiveness at the entry point. The Pennsylvania Groundwater Rule requirement that all community systems maintain at least 4-log treatment of viruses for their

groundwater sources is a logical progression of disinfection treatment and will provide additional protection of public health. Most systems are presently capable of providing 4-log treatment of viruses without significant modification. For the remaining systems, this requirement will likely be satisfied by one or more of the following: revising system-specific operational practices, modifying existing storage, or adding storage capacity.

This requirement will be phased in based on population served, and is planned to occur in the period from January 1, 2011 to January 1, 2013. All public groundwater systems will need to comply with triggered monitoring requirements from December 1, 2009 until they receive DEP notification that they are demonstrating at least 4-log treatment and then are directed to begin compliance monitoring.

§ 109.1302(a)(2) establishes a default entry point free chlorine minimum residual of 0.4mg/L or its equivalent for all community systems. Community water systems must maintain the default minimum residual until they successfully demonstrate that an alternative residual can provide at least 4-log treatment of viruses. The default residual is being required to better protect public health during the interim period between the effective date of this rule and the date when the Department has verified that a community groundwater system is providing 4-log treatment of viruses.

The default residual of 0.4mg/L was determined using the accepted calculation for CT. Based on conservative assumptions of groundwater characteristics in Pennsylvania (temperature no less than 5°C and pH less than 9), a CT value of 8 min-mg/L is required to achieve 4-log inactivation of viruses. Further, existing Design Standards in Part II of the Department's "Public Water Supply Manual" require that 20 minutes of contact time with minimal short circuiting be provided prior to each entry point. Assuming the Design Standards are met, a minimum residual of 0.4mg/L multiplied by 20 minutes contact time results in the required CT value of 8 min-mg/L.

Most systems can readily maintain a 0.4mg/L minimum residual prior to each entry point simply by adjusting their level of disinfectant application. Currently ninety-three percent of community water systems disinfect with chlorine. Of these systems, at least sixty percent presently maintain an average residual of 0.4mg/L or greater in the distribution system (based on available compliance data). Because entry point disinfectant residuals are greater than levels in the distribution system, it is expected that the percentage of systems presently maintaining at least 0.4mg/L at the entry point is much higher than sixty percent.

§ 109.1303 *Triggered monitoring requirements for groundwater sources.*

This section establishes source water monitoring requirements for systems that have not received confirmation from the Department that they are providing at least 4-log treatment of viruses and thus are not conducting compliance monitoring. In response to a coliform-positive sample collected under 40 CFR § 141.21(a), the Groundwater Rule requires these systems to collect additional groundwater source samples to be analyzed for the presence of *E. coli*.

The Department will require source samples to be collected prior to any treatment, whereas a sampling location is not specified in 40 CFR § 141.402(a). To eliminate the possibility of source water pathogens being inactivated or removed (thus rendering a sample non-representative of source water quality) the Department will not approve source water sampling locations downstream of any treatment.

The Federal rule, 40 CFR § 141.402(a)(2), requires source water samples be collected from “each ground water source in use at the time” the routine total coliform-positive sample was collected. The Department clarifies this requirement by specifying that samples should be collected from each source connected to the distribution system where the total coliform-positive sample was collected. The revised language eliminates confusion regarding which source or sources may have been in use at the time of the positive sample by instead focusing on a source’s potential of contributing to the distribution contamination. Prior to sampling, systems may still obtain written approval under § 109.1303(c) to collect samples from representative sources.

In response to any total coliform-positive routine sample that is not invalidated, systems will be required to collect source water samples in accordance with § 109.1303(a). The federal rule, 40 CFR § 141.402(a)(5), allows states the ability to determine if a distribution deficiency or condition caused the total coliform-positive routine sample and, thereby, relieve systems from their obligation to conduct triggered source water monitoring. For systems conducting routine coliform monitoring as prescribed in § 109.301(3), the Department does not believe it is possible to eliminate source water quality as a potential contributor to the distribution contamination without additional sample results.

Under the federal rule, 40 CFR § 141.402(a)(2)(iii), a groundwater system serving less than 1000 people (and thus required to collect four check samples in response to a routine total coliform positive sample) may also use a source water sample collected to satisfy the triggered monitoring requirements under § 109.1303 as one of the repeat samples under the Total Coliform Rule (TCR). This sample substitution is not permitted in Pennsylvania’s Groundwater Rule. The Department believes that source water samples are not representative of the distribution system and, therefore, should not be used in any analyses designed to draw inferences about distribution system water quality.

§ 109.1304 *Assessment source water monitoring.*

Under the federal rule, 40 CFR § 141.402(b), assessment source water monitoring is an option for a state to implement. The Department has chosen to adopt assessment source water monitoring to target higher-risk groundwater sources for additional source water monitoring and evaluation. This provision will only apply to non-community water systems considering that all community water systems will eventually be required to provide at least 4-log treatment of viruses. In Pennsylvania, systems that draw groundwater from a carbonate aquifer (i.e. – limestone) are considered susceptible to fecal contamination and therefore must conduct assessment source water monitoring as directed by the Department or install a treatment technology that achieves a minimum 4-log inactivation or removal of viruses. Groundwater sources not developed in carbonate aquifers may also be considered sensitive and targeted for assessment source water monitoring. The Department will consider other factors that identify

sources at risk to fecal contamination such as: sensitivity of the source aquifer to fecal contamination, proximity to sources of fecal contamination or microbiological sampling history.

The Federal rule, 40 CFR § 141.402(b)(5), allows a State to approve collection of groundwater source samples for assessment source water monitoring at a location after treatment. To eliminate the possibility of source water pathogens being inactivated or removed (thus rendering a sample non-representative of source water quality) the Department will not approve source water sampling locations downstream of any treatment. Prior to sampling, systems may still obtain written approval under § 109.1304(a)(1) to collect samples from representative sources.

§ 109.1305 *Compliance monitoring.*

This section establishes the monitoring requirements for systems that have demonstrated to the Department that they provide at least 4-log treatment of viruses for their groundwater sources. Upon notification from the Department, a system must begin compliance monitoring to ensure treatment efficacy. Systems conducting compliance monitoring are not subject to the requirements of either triggered monitoring or assessment source water monitoring. This section reflects the federal requirements found in 40 CFR § 141.403(b).

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

This section establishes requirements for systems electing to or obligated to provide at least 4-log treatment of viruses. This section states that systems must submit information on forms provided by the Department describing how at least 4-log treatment of viruses is provided. If an engineer's report is required it must be prepared by or under the supervision of a professional engineer registered to practice in Pennsylvania.

In addition to demonstrating that at least 4-log treatment of viruses will be provided, systems must describe how they will satisfy the compliance monitoring provisions in § 109.1305.

§ 109.1307 *System management responsibilities.*

This section establishes the reporting and recordkeeping obligations for systems subject to the provisions of Chapter 109 Subchapter M. The requirements of this section reflect the provisions in 40 CFR § 141.405.

For systems conducting compliance monitoring, § 109.1307 (a)(1)(ii) requires Tier 1 public notice when a breakdown in treatment occurs for greater than 4 hours, whereas 40 CFR § 141.404(c) and (d) mandates Tier 2 public notice. This addition is consistent with Pennsylvania's existing public notification regulations in § 109.408 that necessitates Tier 1 public notice for a failure or significant interruption in key water treatment processes.

F. Benefits, Costs and Compliance

Benefits

The Groundwater Rule establishes monitoring requirements to ensure adequate treatment is provided at groundwater systems and defines a risk-targeted approach to identify groundwater sources that are vulnerable to fecal contamination. Implementation of the Rule will create public health benefits for approximately 7 million Pennsylvanians resulting from the reduction in endemic acute viral illness and death from two groups of viruses. Type A virus, represented by rotavirus, is highly infectious, but generally creates mild health effects. Type B virus, represented by enterovirus, is moderately infectious. Although most illnesses caused by type-B viruses are also mild, may produce severe health effects in children, the elderly, and those with compromised immune systems.

The EPA has estimated that the nation may avoid 39,442 illnesses associated with Type A rotavirus, and 2,426 illnesses related to Type B enterovirus. In Pennsylvania, this translates to 2,405 and 148 illnesses avoided respectively.

The EPA has quantified the mean annual cost of illness occurring as a result of viruses in public water supply wells under normal operating conditions. EPA estimated the national annual benefits from Rule implementation to be \$16 million for community water systems, \$0.9 million for nontransient noncommunity systems and \$2.7 million for transient noncommunity systems. Resulting from illnesses avoided in Pennsylvania this translates to annual benefits of \$632,657, \$54,548 and \$193,321 respectively, totaling \$880,527.

The proposed variance and exemption revisions will ensure that public water systems consider all other options for achieving compliance prior to requesting a variance or exemption from an MCL or treatment technique requirement.

Compliance Costs

The EPA estimated the annual cost to implement the Groundwater Rule for public water systems nationwide will be approximately \$50 million. It is anticipated that Pennsylvania's public water systems will incur a cost of \$2.9 million annually. The yearly cost for each type of public water systems is projected to be the following:

System Type	Estimated Annual Cost
Community Water System	\$738,627
Transient Noncommunity Water System	\$1,893,114
Nontransient Noncommunity Water System	\$298,198

Nationwide, the annual cost states will bear are expected to be \$11.8 million as calculated by the EPA. The Groundwater Rule is expected to cost the Pennsylvania state government \$708,000 yearly.

The proposed minor clarifications to Subchapter I, variances and exemptions, primarily address existing requirements. As a result, costs are not expected to substantially increase or decrease.

Compliance Assistance Plan

Pennsylvania's PENNVEST Program offers financial assistance to public water systems that qualify. Eligibility is based upon factors such as public health impact, compliance necessity, and project/operational affordability. Assistance is in the form of a low-interest loan and in hardship cases additional grant funds may be awarded.

The Safe Drinking Water Program will provide training to systems identified to be effected by the Groundwater Rule. To facilitate system compliance, the Bureau of Water Standards and Facility Regulation will send informational documents to groundwater systems prior to the effective date of the regulation to clarify the various provisions of the Rule.

Paperwork Requirements

Systems providing at least 4-log treatment of viruses must submit forms to the Department successfully demonstrating treatment effectiveness in order to commence conducting compliance monitoring. As a one time cost, systems may prefer to employ a professional engineer to complete any applicable forms or reports.

The requirements of the Groundwater Rule include additional monitoring, recording and reporting. It is anticipated these obligations will require little or no additional paperwork.

G. Sunset Review

This regulation will be reviewed in accordance with the sunset review schedule published by the Department to determine whether the regulation effectively fulfills the goals for which it was intended.

H. Regulatory Review

Under section 5(a) of the Regulatory Review Act (71 P.S. § 745.5(a)), on November 19, 2008, the Department submitted a copy of these proposed amendments to the Independent Regulatory Review Commission (IRRC) and the Chairpersons of the House and Senate Environmental Resources and Energy Committees. In addition to submitting the proposed amendments, the Department has provided IRRC and the Committees with a copy of a detailed regulatory analysis form prepared by the Department. A copy of this material is available to the public upon request.

Under section 5(g) of the Regulatory Review Act, IRRC may convey any comments, recommendations or objections to the proposed regulations within 30 days of the close of the public comment period. The comments, recommendations or objections shall specify the regulatory review criteria that have not been met. The Regulatory Review Act specifies detailed

procedures for review of these issues by the Department, the General Assembly and the Governor prior to final publication of the regulations.

I. Public Comments

Written Comments - Interested persons are invited to submit comments, suggestions, or objection regarding the proposed regulation to the Environmental Quality Board, P.O. Box 8477, Harrisburg, PA 17105-8477 (express mail: Rachel Carson State Office Building, 16th Floor, 400 Market Street, Harrisburg, PA 17105-2301). Comments submitted by facsimile will not be accepted. Comments, suggestions, or objections must be received by the Board by December 29, 2008. Interested persons may also submit a summary of their comments to the Board. The summary may not exceed one page in length and must also be received by December 29, 2008. The one-page summary will be provided to each member of the Board in the agenda packet distributed prior to the meeting at which the final regulations will be considered.

Electronic Comments - Comments may be submitted electronically to the Board at RegComments@state.pa.us and must also be received by the Board by December 29, 2008. A subject heading of the proposal and a return name and address must be included in each transmission. If an acknowledgement of electronic comments is not received by the sender within two working days, the comments should be retransmitted to ensure receipt.

BY:

JOHN HANGER
Acting Chairman
Environmental Quality Board

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.

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

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:

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

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:

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

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,

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

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:

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

Common log treatment values and corresponding percent treatment values include:

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

4.0-log

99.99%

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.

§ 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.

Subchapter B. MCLs, MRDLs OR TREATMENT TECHNIQUE REQUIREMENTS

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

(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.

(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.

Subchapter C. MONITORING REQUIREMENTS

§ 109.301. General monitoring requirements.

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

(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).

§ 109.304. Analytical requirements.

(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)].

§ 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:

(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.

§ 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.

§ 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.

§ 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:

(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:

(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***.

§ 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***.

§ 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.

§ 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:

(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.

(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.

(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).

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.

(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:

**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.**

* * * * *

§ 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.**

* * * * *

(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.

* * * * *

§ 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.**

* * * * *

(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:

* * * * *

(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.

* * * * *

(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.

* * * * *

(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.

(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.

(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:

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.**



Pennsylvania Department of Environmental Protection

Rachel Carson State Office Building

P.O. Box 2063

Harrisburg, PA 17105-2063

November 19, 2008

Policy Office

717-783-8727

Kim Kaufman, Executive Director
Independent Regulatory Review Commission
14th Floor
333 Market Street
Harrisburg, PA 17101

Re: Proposed Rulemaking: Groundwater Rule
(25 Pa. Code, Chapter 109) (#7-425)

Dear Mr. Kaufmann:

Enclosed is a copy of a proposed regulation for review and comment by the Independent Regulatory Review Commission pursuant to Section 5(a) of the Regulatory Review Act. This proposal is scheduled for publication as a proposed rulemaking in the *Pennsylvania Bulletin* on November 29, 2008, with a 30-day public comment period. The Environmental Quality Board (EQB) adopted this proposal on August 19, 2008.

The proposed rulemaking will amend the Department's Safe Drinking Water regulations found at 25 Pa Code, Chapter 109 by incorporating requirements contained in the Federal Ground Water Rule, which was promulgated by the U.S. Environmental Protection Agency on November 8, 2006 (see 2006 FR Volume 71, No. 216). Currently, there is no Federal regulation that requires monitoring of groundwater sources or corrective action when fecal contamination is found in groundwater sources. To address this, EPA established the Ground Water Rule as a risk-targeted strategy where ground water systems that are susceptible to fecal contamination would be targeted for regulation, instead of the regulation of all ground water systems. Through this proposal, the Department has incorporated EPA's strategy, whereby systems with sources potentially at risk of fecal contamination that do not provide adequate treatment of viruses must monitor their untreated source water for *E. coli*, if directed by the Department. Systems detecting the presence of *E. coli* in their source water must take corrective action to protect consumers. Adoption of the Federal Groundwater Rule is necessary for the Commonwealth to maintain primacy of its Safe Drinking Water Program. There are provisions of the Commonwealth's proposal that are more stringent than federal requirements. These provisions are highlighted in the Preamble of the rulemaking.

The proposed rulemaking will affect all public water suppliers served by groundwater sources, including approximately 1,700 community water systems and 7,400 noncommunity water systems. Contingent upon final passage of the rulemaking, systems will need to comply with triggered monitoring requirements from December 1, 2009, until they receive notification from the Department that they have

successfully demonstrated at least 4-log treatment of viruses and are directed to begin compliance monitoring.

The Department consulted with the Small Water Systems Technical Assistance Center (TAC) Advisory Board during the development of the rulemaking, which recommended that the proposal be submitted to the EQB for approval as a proposed rulemaking.

The Department will provide the Commission with the assistance required to facilitate a thorough review of this proposal. Section 5(g) of the Regulatory Review Act provides that the Commission may, within 30 days of the close of the comment period, convey to the agency its comments, recommendations and objections to the proposed regulation. The Department will consider any comments, recommendation or suggestions submitted by the Commission, as well as the Committees and public commentators, prior to final adoption of the regulation.

Please contact me at 717-783-8727 if you have any questions or need additional information.

Sincerely,



Michele L. Tate
Regulatory Coordinator

Enclosures



**TRANSMITTAL SHEET FOR REGULATIONS SUBJECT TO
THE REGULATORY REVIEW ACT**

I.D. NUMBER: 7-425
SUBJECT: Groundwater Rule
AGENCY: DEPARTMENT OF ENVIRONMENTAL PROTECTION

TYPE OF REGULATION

- Proposed Regulation
- Final Regulation
- Final Regulation with Notice of Proposed Rulemaking Omitted
- 120-day Emergency Certification of the Attorney General
- 120-day Emergency Certification of the Governor
- Delivery of Tolled Regulation
 - a. With Revisions
 - b. Without Revisions

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 REVIEW COMMISSION

FILING OF REGULATION

DATE	SIGNATURE	DESIGNATION
11-19-08	<i>[Signature]</i>	Majority Chair, HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
11-19-08	<i>Jenica B. Yano</i>	Minority Chair, HOUSE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
11-19-08	<i>[Signature]</i>	Majority Chair, SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
11-19-08	<i>A. Rybarczyk</i>	Minority Chair, SENATE COMMITTEE ON ENVIRONMENTAL RESOURCES & ENERGY
11/19/08	<i>Kathy Cooper</i>	INDEPENDENT REGULATORY REVIEW COMMISSION
		ATTORNEY GENERAL (for Final Omitted only)
11-19-08	<i>Maya Garas</i>	LEGISLATIVE REFERENCE BUREAU (for Proposed only)

